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Original Research Article

FACTORS AFFECTING ADHERENCE IN ASTHMA CHILDREN'S AND ASSESS THE IMPACT OF PATIENT COUNSELING

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Abstract: Objectives: To study the adherence in Asthma children's and to assess the factors contributing to non-adherence. **Methodology**: A total of 368 patients with bronchial asthma were studied over a period of two years at two different hospitals in Tamilnadu in India. Once included in the study, patient's follow-up was done for three months. Percentage adherence therapy was calculated. If patient was non-compliant to the therapy, were employed various health education strategies to improve the adherence in these patients. **Results**: A total of 368 patients with bronchial asthma who were started therapy over duration of two years were included in the study. At the end of three months, it was observed that, 344 patients (93.49%) were having non-adherence. Factors that were associated with poor adherence were: lower educational level status, poor socio-economic status, cumbersome regimens, fears about side effects, anger about condition or its treatment, forgetfulness or complacency and patient's ill attitudes toward health. After employing various strategies for improving patients, the adherence rate improved patients in 142 patients (41.27.3%) among the earlier non-adherence patients, while the remaining 202 patients (58.72%) were found to be non-adherence even after various educational techniques. **Conclusions**: Non adherence in asthma management is a fact of life and improving strategy probably will be as effective as a good physician–patient relationship. We observed, despite institution of various education strategies, it is difficult to improve adherence towards aerosol therapy in patients with bronchial asthma.

Key Words: Bronchial asthma, Non-adherence, Health education

Introduction: Bronchial asthma is a major public health problem affecting a large number of individuals of all ages. Globally, 100 to 150 million people suffer from asthma. Estimates indicate that, India has 20 to 28 million asthmatics and the prevalence amongst children (5 to11 years) is in between 10% to 15%. Being a chronic medical condition, management of asthma requires continuous medical care.

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Modern management of bronchial asthma requires prolonged medications. Medications for asthma reverse and prevent symptoms and airflow limitations. A key issue in proper management of bronchial asthma is adherence to treatment. Poor to prescribed therapy increases morbidity and mortality and it is increasingly being documented that long-term adherence or adherence to prescribed therapy is hard to attain[1]. Studies have reported that50% of patients with a chronic disease do not use their medication at all or do not use it as prescribed [2]. A key reason for poor adherence is that patients with a chronic disease do not have a satisfactory understanding of their condition and the need for medication. The economic burden of bronchial asthma to the society is well documented in industrialized countries [3]. Poor asthma control is responsible for a large proportion of the total cost of the disease and consequently, improving adherence. Control of the disease would decrease both direct and indirect costs. The present study was undertaken to study the factors that influence patient's adherence with prescribed medication, and to identify factors to improve the patient education so that the adherence to the therapy can be improved.

Material and Methods: The study was undertaken at two different hospitals in Tamilnadu, India over a period of 2 years. Children above 5 years of age and adults with the diagnosis an asthma for more than 6 month and patients receiving therapy for over six months were included in the study. Those with chronic obstructive pulmonary disease (COPD), cardiac asthma were excluded. All patients were interviewed using a standard interview schedule and requested to maintain a diary regarding the dosing therapy. Apart from a detailed history, physical examination, pulmonary function test includingpeak expiratory flow rate PEFR were measured during the first visit. All patients were followed up on monthly basis for three months. At the end of three months, adherence to treatment was arrived at after studying the patient diary noting, pulmonary function tests and peak expiratory flow rate measurements. Compliant day was defined as one in which the prescribed number of puffs were taken. Patient was said to be adherence if he/she had taken more than 80% of the prescribed medicines during the study period. We tried to improve the non-adherence in the defaulted patients by imparting the patient education programme. Various strategies employed for the patient education program were 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 doubts and myths about the disease. The economic status was classified as per modified B.G. Prasad classification [4].

Results: A total of 368 patients were studied during the period. The majority of the patients (43.60%) were in the age group of 10 to 15years. The male: female ratio was 62:38. Majority of patients 200 (58%) had either primary or secondary education while 18% were illiterate. Majority of the patients belonged to middle socio-economic status (Table 1).

Table 1. Baseline characteristics of the patients

	N (%)
In the total 368 respondent 344 are having non-adherence	344(93.49)
Gendre	
Male	212(61.62)
Female	132 (38.37)
Age	
>5	92(26.74)
5-10	102(29.65)
10-15	150(43.60)
Education of parents	
Illiterate	62(18.02)
Primary	79(22.96)
Secondary	121(35.17)

Degree	82(23.83)
Economic status of guardians Lower Middle Upper	 111 (37) 138 (46) 95(27)

The education status was significant and there was moderate correlation between educational status and adherence to the therapy. Socio-economic status of the patient was another significant risk factor associated with the non-adherence to the therapy. More than two-third of the patients (80%) were using dry powder inhalers (DPIs), and 20% were using metered dose inhalers (MDIs) and the remaining 18 patients (6%)used combination of the drugs. The major factors as described in table 2 were the key reasons for decreased adherence. The major factors associated with poor adherence were: beliefs and behavior and duration of therapy 270(78.49%), higher cost of the therapy (77.9%), frequent changes in regimen 71.8%) fears about side effects of the medications (41.86%), feeling of well-being on therapy (64.24%) and negligence on the part of the patients (7%).Other reasons included forgetfulness or complacency and attitudes toward ill health, anger about condition, etc.

Table2. Causes for Non-adherence for asthma therapy

Complexity of medication	**111(32.26)**
Frequent changes in regimen	**247(71.80)**
Treatment requiring certain techniques	165(47.96%)
Unpleasant side effects	144(41.86%)
Duration of therapy	271(78.77%)
Lack of immediate benefit of therapy	254(73.84%)
Medications with social stigma	158(45.93%)
Medication cost	268(77.90%)
Lack of family or social support	103(29.94%)
beliefs and behavior	270(78.49%)
Feeling of well being	221(64.24)

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

Amongst the reasons for drug-related factors included difficulties with inhaler devices, awkward regimes (e.g., four times daily or multiple drugs), dislike of medications and distant pharmacies. Various strategies were employed to improve the patient's non adherence to the therapy. We have tried to educate these patients in different ways, so to improve the adherence to the therapy. These included: verbal praise -12%, interactive communication skills -11%, tailoring the medications to the patient's routine -10%, conducting asthma awareness camps for the defaulted patients -12%, distribution of literature regarding asthma and its consequences in the local languages -20% and answering to the family's doubts and myths -10%. After 12 weeks of therapy, the adherence improved in patients (34.3%) who had defaulted earlier. The remaining 132 patients (65.7%) were found to be non-adherence. The improvement in the adherence was observed to be better in female patients (48%) as compared to male patients (25%).

Discussion: Non-adherence to treatment programme is more common than usually suspected in patients with asthma and other chronic conditions. However, true rates of non-adherence are hard to come by because patients do not accurately report and physician's often do not enquire critically. This is important because compliant patients are significantly less likely to experience exacerbations than less compliant patients [6]. Although there is much known about why so many patients do not take their medicines, there is less information on how to actually improve adherence.

Methods to improve adherence must be validated with objective data and outcome measurements before these can be recommended. A word about adherence, for mixed reasons (political correctness, fashion, or a drift toward fuzzy language?), adherence seems to have become the preferred word.

These imply about the same thing but adherence and non-adherence over adherence and non-adherence should be because they are stronger words and it means that the treatment programme has been prescribed and that the patient has not followed it for whatever reason or reasons[8]

Asthma, a chronic lung disease that affects people of all ages, races, and ethnic groups, is a growing concern throughout the world. As a result, there has been a considerable interest in a number of areas. 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[9] 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. Rhodes *it al*[10] observed higher prevalence of asthma in female patients as compared to males. Females with current asthma reported adult onset of asthma more often, and males reported childhood onset of symptoms more often. Sex differences were identified for the eight asthma-control characteristics. Gibson et al[11] in their study in pre-school children for the adherence of asthma medications observed that parental supervision would result in good adherence. Lewis and Lewis12 investigated the consequences of empowering children the to care for themselves. In the present study, children 43.60%out of which 10-15children Non-adherence depends on many factors and these are difficult to sort out[13]. Beliefs, perceptions, and experience constitute some of the variables associated with adherence. It had been suggested that race, crime, age, and other environmental factors are associated with adherence and non-adherence but these are speculative[14].

There are higher adherence rates in acute *versus* chronic conditions. There is no standard for "adequate adherence."How much is enough? Do all patients with persistent asthma really need daily controlled medication? Adherence in clinical trials can be very high. Not so in "real life" and "real life" is not a clinical trial. Should this make us uncomfortable? Ability of physicians to recognise non-adherenceis poor. Interventions to improve adherence have mixed results. Lindberg *et al*[15] studied various factors affecting the adherence in asthma patients and they have identified five important factors regarding self-reported adherence 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 12 patients with higher education (post graduation) and all this patients had regular adherence with the therapy. Patients having graduation degree (36 patients) also had complete regular therapy with the medications. They did not default single time. Patients having secondary education had a default rate of 60%, patients having primary education had a high default rate of 71.4% while illiterate patients had a higher default rate 100%. They also missed more number of doses of the medications. Education status was thus a significant factor for the non-adherence to the therapy for asthma medications. Valid educational programmes for asthmatics can improve the knowledge about the disease and to understand how they look after themselves by careful evaluation of their own symptoms and respiratory problems. Patients attending two lessons with helpful training tools significantly increase their knowledge about asthma treatment adherence and patient self management[16].

The economic status of the patient is important for the management of asthmas medications has to be taken on a regular basis for longer periods. Taiwan National Health Insurance Research

Database covering the period from 1997 to2001 [17]

The aim of patient education in asthma is to provide the patient and the patient's family with suitable information and training so that they can keep well and adjust according to a planned medication. The factors involved in non-adherence in the present study are multifactorial. Adherent patients had greater understanding about their illness and the options for managing the illness. They also had greater confidence that current management would keep their illness under control. However, management of illness was a mystery for patients with suboptimal adherence, and they had greater faith in the safety of natural remedies. Dowell and Hudson[18] concluded that accepting the recommended treatment, especially long-term treatment perceived as powerful, requires an acceptance of the illness. Recently, a study by Johnson *et al*[19] observed suboptimal adherence for inhalation therapy to be 63% in patients with (COPD). Satisfaction with and faith in the treating physicians were found to be low among the less adherent group. Less adherence patients believed that their doctors had limited management options to offer them. It has-been observed that patients who accept their medication regimen fully as prescribed by their doctors are likely to assume a passive role in managing their illness and relinquish control to the doctor[16].Adherent patients were less likely to be confused about their medications, which might have been the result of their greater medication knowledge.[19] Less adherent patients were more likely to vary their recommended management to suit their life style or based on how they felt. "Routinisation" i.e., the ability to fit to a medication regimen to one's daily routine, has-been recognised as a major determinant of improved adherence[19]. Associated co- morbid condition is another important factor responsible for the non-adherence.

Depression is known to be a risk factor for the non-adherence[20]. However, in the present study, any specific questions about depression in the questionnaire were avoided due to the sensitivity of the topic and concerns about patient non-response. Patient's acceptance of the disease process and recommended treatment, knowledge and faith about the treatment, effective patient-clinician interaction, and routinisationof drug therapy are critical for optional medication adherence in bronchial asthma patients.

In the present study, strategies to improve patients adherence were undertaken like tailoring the medications to patients routine, review the patients self-management plan, special attention and encouragement and praised for their inhaler techniques, some of the patients family worries answered and interactive communications techniques. A separate asthma awareness camp was also conducted for these non-adherent patients. Patient education was organised for the non-adherence patients. These patients should be given adequate opportunity to express their expectation of both for the disease and its treatment. It is reasonable for most patients to expect freedom from symptoms day and night, no restriction on activities, including sports and best possible lung function (e.g., peak expiratory flow). In a study conducted in Sweden on adherence with medications in asthma patients, the important factors for non-adherence were: age, gender, duration of the disease and patients view on asthma.

The major methods that have been proposed and tried to improve adherence include improved dosing schedules, patient education, and improved communication between physician/provider and the patient. It has been well established that less frequent dosing and simple schedules are the best[21]. It is less certain that patient education and/or provider involvement by themselves make a significant difference in the long run[22]. The following are the common factors that are *thought* to improve adherence: specific patient written instructions, patient diaries, and physician / provider interest,

less frequent dosing, long-acting drugs, a simplified dose schedule, 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 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 in 1983 by William Miller[23], and since then, the theory and practice of MI has been expanded upon in several seminal texts and in several hundred peer reviewed papers. MI views ambivalence as part of the natural process of change—a phase that people must go through before fully committing to a decision. Typically, when a doctor interacts with a patient who is ambivalent about change, the doctor can persuade and lecture the patient to change their mind[24]. This approach only further entrenches the patient in their holding position, from which they begin to argue against change.

Although extensive research has been done in efforts to understand and improve adherence in asthma, little progress has been made in cutting the rate of non-adherence.[25] 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 adherence. It is better to design programme that are more convenient and comfortable. Patients take drugs only if they agree that these agents are more beneficial than disruptive[26].John Adams, addressing the Founding Fathers, famously said, “Let experience be our only guide. Reason may mislead us.” The same might be said about our ideas on adherence and/or non-adherence and how to modify them.

Conclusion: The percentage of non-adherence of aerosol therapy in bronchial asthma is 69% which is high significantly. Regular adherence is an important as pectin 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. The best predictor of adherence is patient’s attitude towards the treatment and medicine in general. Patients who have faith in the physician and the prescribed method of treatment are more likely to adhere to the treatment. The same is true for the parents of the children with asthma. Parents who had an unfavorable attitude towards the use of inhaled therapy were less likely to administer treatment according to physicians, guidelines. To ensure betteradherence, patients must believe that by following a prescribed regimen, the severity of their condition will be reduced. Adherence in asthma is a highly individualized phenomenon. No single adherence improving strategy is as effective as multiple approaches in the context of a good physician–patient relationship become of the following.

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