Original Article

Causes of non-compliance with prescribed medication in children with persistent asthma presenting to tertiary care center

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Objective: To determine the causes of non-compliance with prescribed medication in children with persistent asthma presenting to a tertiary care center.

Methodology: This cross sectional study was conducted at Department of Pediatric Medicine, National Institute of Child Health, Karachi from 01-10-2015 to 31-03-2016. A total of 77 patients were included in the study. A questionnaire was administered to review the various reasons of noncompliance in persistent asthma.

Results: The mean age of children was 7.3±1.7 years with M: F = 1: 1.13. Cost of medication was the most common reason of non-compliance with prescribed medication in 32(41.5%) children followed by ineffectiveness of medication in 26(33.8%), difficulty in using inhaler in 12(15.6%), fear of side effect in 4(5.2%) and forgetfulness in three (3.9%)cases.

Conclusion: Cost of medication was the main reason of non-compliance of prescribes medication of asthma. Forgetfulness was the least common reason of non-compliance. (Rawal Med J 202;46:216-219).

Keywords: Inhaled steroids, chronic lung disease, asthma.

INTRODUCTION

Globally about 300 million people are affected by asthma and the prevalence is increasing, especially in children. According to WHO about 15 million disability-adjusted life-years are lost per year.[1] Asthma is a leading cause of annual hospitalizations (34.6% in 18 years or younger children) and annually about 10 million school days are affected due to asthma.[2] In majority of children, asthma develop before age 5 years. Although inhaled corticosteroids (ICS) are very effective, despite the effectiveness of these treatments, non-adherence remains a significant problem.[3]

Poor asthma control due to non-adherence to ICS causes reduction in lung function, increased exacerbations, decreased quality of life, work or school absence, and causes 80% of asthma related mortality.[4] For achieving good asthma control, an 80% adherence rate with ICS is desirable, but the adherence rates range from 30 to 70%.[5] In one study, children used inhalers only in 33% times in a month.[6] In another study adherence rate was <50% in children.[7] This study aimed to undertake use of quantitative methods to elicit reasons of n oncompliance with advised/prescription medication among parents'/care givers of children with asthma presenting to our institution.

METHODOLOGY

This cross sectional study was conducted by Non-probability purposive technique at Department of Pediatric Medicine, National institute of Child Health, Karachi, from 01-10-2015 to 31-03-2016. Sample size was calculated considering 15% as smallest cause of non-compliance (P=0.15)10 on 8% bond of error with 95% confidence interval then estimated sample size was 77 patients. Children age 5-10 years of either gender with mild to severe persistent asthma was included in the study. Persistent Asthma was labeled when day time symptoms occurred more than twice a week and/or nighttime symptoms occurred more than twice a

month. Children having immunodeficiency syndromes, cerebral palsy, epilepsy, and other chronic illness were excluded from the study. An i n f o r m e d c o n s e n t w a s t a k e n f r o m parents/guardians of all children

Compliance was assessed to take the correct dose of prescribed medication at correct interval as advised by the health care physician determined on the basis of history of prescription. Non-compliance was labeled if there was failure of treatment to taken as agreed upon by the patient and the physician determined on the basis of history of prescription.

Reasons of non-compliance were assessed by asking a) forgetting medicine: patient is usually unable to remember the time of taking medication at least 2 doses in 3 days. b) Ineffective medication: patient is not satisfied with response to treatment who taken at least 4 weeks. c) Side effects: patient is afraid that some problem likes habit-forming, weight gain, tendency may occur with treatment so does not take medicine at all. d) Cost of medicine: inability to purchase medication. e) Difficulty of using of inhaler: fail to adherence to correct technique continuously.

Statistical Analysis: For data analysis, SPSS version 22 was used. Post stratification appropriate Chi square was applied considered p≤ 0.05 was considered statistically significant.

RESULTS

Out of 77 children, 41(53.2%) were female and 36(46.8%) male (male to female ratio was 1: 1.13. Out of 77 children, 51(66.2%) children had moderate and 26(33.8%) severe asthma Majority of children belonged to families with low income (Table 1). Cost of medication was the most common reason of non-compliance with prescribed m edication in 32 (41.5%) followed by ineffectiveness of medication in 26 (33.8%), difficulty in using inhaler in 12 (15.6%), fear of side effect in 4 (5.2%) and forgetfulness in 3 (3.9%) cases (Table 2 and 3).

Table 1. Characteristics of study participants.

Characteristics	Number	%	Mean ± SD
Gender distribution			
Male	36	46.8%	38.5 ± 2.5
Female	41	53.2%	
Age distribution			
≤ 5 Years	18	23.4%	38.5 ± 20.5
> 5 Years	59	76.6	
Severity of asthma			
Mild	0	0	25.667 ± 20.822
Moderate	51	66.2%	
Severe	26	33.8%	
Monthly income of parents			
<10000	46	59.7%	25.667 ± 16.337
10000 – 15000	25	32.5%	
> 15000	6	7.8%	
Education of parents			
Illiterate	42	54.5%	25.667 ± 14.384
Matric	28	36.4%	
Graduate	7	9.1%	

Table 2. Reasons of noncompliance due to forgetting medicine and fear of side effects.

			P-Value
Forgetting Medicine	**Age < 5years**	**>5 years**	0.922
	2(11.2%)	1(1.7%)	
	Moderate Asthma	**Severe Asthma**	
	2(3.9%)	1(3.8%)	
	Monthly Income <10,000	**Monthly income > 10,000**	
	2(4.3%)	1(4%)	
	Parent Illiterate	**Parent Literate**	
	2(4.8%)	1(3.6%)	
Fear of Side effects	**Age < 5years**	**>5 years**	0.337
	0	4(6.8%)	
	Moderate Asthma	**Severe Asthma**	
	3 (5.9%)	1(3.8%)	
	Monthly Income <10,000	**Monthly income > 10,000**	
	2(4.3%	2(20.7%)	
	Parent Illiterate	**Parent Literate**	
	1(2.4%)	3(21.4%)	

Table 3. Reasons of noncompliance due to cost of medicine and difficulty in inhaler use.

Cost of medicine	**Age < 5years**	**>5 years**	0.0006
	8(44.4%)	24(40.7%)	
	Moderate Asthma	**Severe Asthma**	
	19(37.3%)	13(50%)	
	Monthly Income <10,000	**Monthly income > 10,000**	
	24(52.2%)	8(70%)	
	Parent Illiterate	**Parent Literate**	
	19(45.2%)	13(78.3%)	
Difficulty inhaler use	**Age < 5years**	**>5 years**	0.224
	4(22.2%)	8(13.5%)	
	Moderate Asthma	**Severe Asthma**	
	9(17.6%)	3(11.5%)	
	Monthly Income <10,000	**Monthly income > 10,000**	
	6(13%)	6(24%)	
	Parent Illiterate	**Parent Literate**	
	7(16.7%)	5(28.6%)	

Proportions of non-compliance with prescribed medication were high in children with age >5 years and proportions of non-compliance with prescribed medication were high in children with moderate asthma (Table 3). Cost of medication was most common reason among children with poor families 24 (52.2%) while ineffectiveness of the medication was most common reason in children with parent's monthly income 10000 – 15000 rupees 12 (48%). Cost of medication was most common reason among children illiterate parents 19 (45.2%) while ineffectiveness of the medication was most common reason in children with parent's education secondary or above 11 (39.3%).

DISCUSSION

In children, various protocols and guidelines have been developed for the management of asthma, but most of the time parents complain of no improvement in the general condition of the child. For solving this issue, compliance of asthma medications should be checked at every visit, before any change in the management. Every effort should be made to inquire whether the child is taking the prescribed inhaler daily and the technique is also reassessed.

Poor compliance with medications can lead to life threatening status asthmatic attacks. There are various reasons for poor compliance, among them poor communication skills of doctors is top of the list. Lack of Demonstration of using inhalers is also a contributing factor. Adherence to treatment will have been improved to reduce the morbidity and mortality from asthma in children. About 30-70% children are not adherent to asthma medications, causing poor health care outcomes.[8]

In this study, cost of medication was most common reason among children with poor families, while ineffectiveness of the medication was most common reason in children with parent's monthly income 10000-15000 rupees. Among illiterate parents, cost of medication was most common reason of non-compliance. In a study from Lahore, factors were different from our study; 38.4% patients forgot to take medications, 34.5% stopped taking medication when asthma was under good control, and 47.4% forget to take their medications during travelling.[9] In an international study results were also different from our study; there was concerns about side effects of drugs (58%), worries about safety of drugs (19%), and fear of addiction to asthma medication (31%).[10] The factors were different from our study due to good economy and good literacy rate of that society as compared to us, that's why they were more concerned about drug side effects as compared to the cost of the drugs.

A study from New Zealand showed that medication side-effect was responsible for non-adherence to asthma medications in 9.9% children while cost was responsible in 20.7% children.[11] In an Indian study, fear of side effects was causing non-compliance in 38% patients, inhaler cost in 30% patients and concerns about habit formation was responsible in 12.7% patients.[12] In a systemic review, concerns about the side effects (58%), was the cause of non-adherence to asthma medicines, while safety concerns (19%), and addiction concerns (31%) was responsible for poor adherence.[10]

In an international study, poor adherence was due to poor knowledge of metered dose inhaler spacer use in children reflecting the importance of health education.[13] In another study, poor adherence was observed in teenagers due to oppositional behavior, peers pressure, risk-talking behaviors, and disregard for health concerns.[14] A study from Saudi Arab reported that majority of patients (73%) stopped

medication as soon as they feel better.[15]

An effective asthma education program should contain the factors that causes the non-adherence with asthma controller therapy. Doctors in the primary health care centers should not only prescribe the asthma controller therapy but proper education should be given to achieve a good asthma control.

CONCLUSION

In this study, cost of medication was the main reason of non-compliance of prescribed medication of asthma in children. Other reasons were ineffectiveness of medication, difficulty in using inhaler, fear of side effect and forgetfulness.

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