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RESEARCH ARTICLE

Adherence to asthma therapy and its corelation with asthma control in children

[1]Sana Kanwal, [1]Khushbakhat Ishrat Ullah, [1]Kainat Nizam

Abstract

Objective: To assess the degree of medication adherence among asthma patients and association of asthma control level with the degree of adherence.

Methods: This descriptive cross-sectional study was conducted at Department of Pediatrics, Nishtar Hospital, Multan, Pakistan, from July to November 2018, and comprised persistent asthma patients. Medication adherence in these paediatric subjects was assessed by using Morisky medication adherence assessment questionnaire. Children were categorised using Global Initiative for Asthma (GINA) guidelines as having well-controlled, partially-controlled or uncontrolled asthma. Data was analysed using SPSS 21.

Results: Out of 310 subjects, 202(65%) were male and 108(34.83%) were female. The overall mean age was 8.9±3.5 years. Of the total, 66(21.3%) had well-controlled asthma, 71(22.9%) partially-controlled and 173(55.8%) uncontrolled. Low adherence was found in 138(44.5%) subjects, medium adherence in 71(22.9%), and high adherence in 101(32.6%). High adherence was significantly associated with well-controlled asthma ($p<0.05$).

Conclusion: Adherence with medication regimen was found to be necessary for obtaining maximum therapeutic benefits in children with asthma.

Keywords: Childhood asthma, Asthma control, Medication, Adherence, Assessment.

Introduction

Asthma is a chronic inflammatory disease of the airways associated with high healthcare resource utilisations and reduced quality of life.[1] More than 300 million people are suffering from asthma worldwide.[2] Although exact epidemiological data of bronchial asthma is lacking, it is a major health problem in Pakistan, posing high burden on our healthcare system. It is estimated that almost 5% of the total population is suffering from bronchial asthma and among them 5% belong to the paediatric age group.[3] Asthma prevalence was found to be 18% among children of 13-14 years age groups in a study done in Karachi in 2006.[4] According to the Global Initiative for Asthma (GINA), prevalence of asthma in Pakistan is 4-5%.[5] Changes in lifestyle, environmental pollution, urbanisation, obesity and lack of exercise are major risk factors responsible for this increase in the incidence, prognosis and severity of childhood asthma.[6]

It is well established that effective management of asthma depends upon patient's adherence to daily treatment regimens. Taboos and myths regarding asthma in our society are other risk factors posing significant hindrance to the effective management of asthma.[7] Adherence to asthma medication regimens vary greatly and various studies have reported adherence rates between 30% and 70%,[8] but in Pakistan no study has been done so far regarding medication adherence assessment in childhood asthma.

Poor adherence to treatment regimens results in decreased effect of prescribed medications and subsequently increases the likelihood of poor outcomes.[2] Omission of doses, incorrect medications, use of incorrect doses, discontinuation of drugs without physician advice, not following advice to avoid allergens, wrong inhalation technique and use of complementary and alternative medications (CAM) are various forms of non-adherence to asthma treatment.

The current study was planned to assess the degree of medication adherence and its association with asthma control in paediatric patients.

Subjects and Methods

This descriptive cross-sectional study was conducted at Department of Pediatrics, Nishtar Hospital, Multan, Pakistan, from July to November 2018, and comprised diagnosed persistent asthma patients aged 4- 15 years who were taking medication for at least 1 year. Patients newly diagnosed with asthma or having intermittent type were excluded and so were those having disease involving pulmonary complications like cystic fibrosis, tuberculosis etc.

Approval was obtained from the institutional ethic

[1] Nishtar Hospital, Multan and Nishtar Medical University, Multan, PB, Pakistan.

committee and informed consent was obtained from the caretaker/patient. By taking 30% expected percentage of medication adherence in childhood asthma, a sample size of 310 was calculated with 95% confidence level and 5% margin of error. The extent to which patients take medications as prescribed by their healthcare providers was defined as medication adherence.[9] Morisky medication adherence assessment (MMAS) questionnaire was used to assess medication adherence. This eight-item compliance scale had an alpha reliability of 0.83. Permission was taken from Dr Morisky for the use of his questionnaire.[8] As most of the patients belonged to poor socioeconomic status and were unable to understand English, so the questions were asked in native language from parents/caregivers or the child himself/herself if >8 years of age with the help of single interpreter during the whole study period. Children were categorised as having low adherence i.e. MMAS score <6, medium with MMAS 6-8 or high adherence at MMAS=8, according to the scale. The total scale has a range of 0 to 8. Score of 1 was given for the questions answered as NO, and 0score was given for the questions answered as YES except for item nos. 2 and 8 which were positive statements and were scored in reversed order. Asthma control in these children was defined according to GINA guidelines. Patient were categorised as having well controlled, partially controlled or uncontrolled based on asthma symptoms over the past 3 months (daytime symptoms, limitation of daily activities, nocturnal symptoms, and need for rescue medication).[10]

All analysis was performed using SPSS 16. Frequencies were calculated for normally distributed variables with mean and standard deviation, while chi square was applied for categorical variables. P<0.05 was taken as statistically significant.

Results

Of the 310 children, 202 (65%) were males and

Table-1: Demographics data of children with persistent asthma.

Category	Total n= 310 (100%)
Age	
Mean	8.9±3.5 years
5 year-8 years	135(43%)
9-12 years	128(41.3%)
13-16 years	47 (15.2%)
Gender	1.8:1
Male	202 (65%)
Female	108 (34.83%)

Table-2: Association of asthma control with adherence level.

	Adherence level MMAS score			p-value
	Low adherence (<6)	Medium adherence (6-<8)	High adherence (=8)	
	138(44%)	71(22.9%)	101(32.6%)	
Well controlled	26 (18.8%)	10(14.08%)	30(29.70%)	0.031
Partially controlled	37(26.8%)	14(19.71%)	20(19.80%)	0.34
Uncontrolled asthma	75(54.34%)	47(66.19%)	51(50.49%)	0.11

Table-3: Morisky medication adherence scale questionnaire.

	Percentage % (n=310)	
	Yes	No
Do you sometimes forget to take your (asthma) medication(s)?	119(38.4%)	191(61.6%)
People sometimes miss taking their medications for reasons other than forgetting. Thinking over the past two weeks, were there any days when you did not take your (asthma) medication(s)?	122(39.4%)	188(60.6%)
Have you ever cut back or stopped taking your (asthma) medication(s) without telling your doctor, because you felt worse when you took it?	94(30.3%)	216(69.7%)
When you travel or leave home, do you sometimes forget to bring along your (asthma) medication(s)?	147(47.4%)	163(52.6%)
Did you take your (asthma) medication(s) yesterday?	249(80.3%)	61(19.7%)
When you feel like your (asthma) is under control, do you sometimes stop taking your medication(s)?	107(34.5%)	203(65.5%)
Taking medication(s) every day is a real inconvenience for some people. Do you ever feel hassled about sticking to your (asthma) treatment plan?	104(33.5%)	206(66.5%)
How often do you have difficulty remembering to take all your medication(s)?		
Never/Rarely 4	166(53.5%)	
Once in a while..... 3	80(25.8%)	
Sometimes..... 2	42(13.5%)	
Usually..... 1	22(7.1%)	
All the time..... 0	0%	

108(34.83%) were females. Overall mean age was 8.8±3.51 years (Table-1).

Regarding asthma control 66(21.3%) children had well controlled asthma, 71 (22.90%) had partially controlled and 173 (55.80%) had uncontrolled asthma. Further, 138(44%) children had low adherence, 71(22.9%) medium adherence, and 101(32.6%) had high adherence. Significant association was found between well controlled asthma and high adherence level (p=0.031 (Table-2).

Of the total, 119(38.4%) patients responded that they sometimes forgot to take their medication, 94(30.3%) used to stop taking their medication without telling their doctor when they felt worse even after taking asthma medications, 107(34.5%) used to stop taking their asthma medication when they felt that asthma was under good control, and 147(47.4%) patients admitted that they sometimes forget to take their medications along when they travelled or left home (Table-3).

Discussion

Poor adherence to treatment and medical advice in chronic illnesses is a well-known fact for physicians. According to World Health Organisation (WHO), poor adherence poses a significant problem in the management of chronic diseases and suggested that more beneficial impact on health outcome can be made by improving treatment adherence rather than improving specific treatments.[1] Various studies on asthma suggest that like in other chronic conditions, only about 50%patients comply with care recommendations over the long term.[1-3] A study reported low/medium adherence level in 38% and high adherence in 62% of children with asthma.[9] In our study 67% children reported to have medium to low adherence and only 32.6% had high adherence.

Current treatments for asthma provide effective long-term control of symptoms as suggested by various recent trials.[10,11] However, poor adherence poses a significant obstacle in controlling asthma symptoms. Non-adherence results in poor self-management of therapy, leading to increases burden of asthma, with significant consequences in terms of quality of life and increased costs both for the family and the healthcare system.[12] A study reported significant association between poor asthma control among low/medium adherence group compared to the high adherence group ($p<0.05$).[9] Similarly, in our study, significant association was found between high adherence level and well controlled asthma.

Evidence-based guidelines suggest that controller medications should be used daily in order to control underlying inflammation in all patients with persistent asthma. However, many patients will not reliably take daily control medications over extended periods of time[13-17] due to various reasons and typically use less than half the amount of medication prescribed.[18,19] The most commonly reported reason patients give for failing to take medication is simply "forget-ting".[20] The current study found that 38.4% patients forgot to take their medications while 13.4% of the patients sometimes found difficulty in taking all their medications. Besides, 94(30.3%) used to stop taking their medication when they felt worse without telling their doctor and 107(34.5%) used to stop taking their asthma medication when they felt that asthma was under good control.

Electronic monitoring devices (EMDs) have been proposed as the Gold standard for measuring adherence.[21] Compared with EMDs, parental report, questionnaires, diaries, canister weights, and pill counts have all been found to overestimate adherence.[22-25]

The current study had several limitations. It used self-reported data in which recall bias is a significant confounding factor and along with that patients might provide exaggerated reports of medication usage in order to pretend themselves more responsible, a behaviour referred to as 'social desirability'. It was a hospital-based study at a tertiary care hospital which may result in selection of children with more severe disease process. Hence, multi-centric studies need to be done in future in order to generalise the data.

Conclusion

Non-adherence should be considered in all children with poorly controlled asthma which therefore necessitates the need to incorporate motivational strategies for patients to improve compliance.

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Conflict of Interest: None.

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