Assessment of asthma control in primary care in Maseru, Lesotho

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Abstract

In spite of the development of global guidelines for the management of asthma, asthma control remains suboptimal worldwide. The aim of this study was to assess asthma control among adult patients treated in primary care. A cross-sectional study was conducted over a 3-month period. Asthmatic patients aged 16 years and above were recruited from two primary health care clinics in Maseru, Lesotho. Data were collected using questionnaires and medical record reviews. Asthma control was evaluated according to the Global Initiative for Asthma (GINA) guidelines. Of the 50 patients enrolled, 62% were female, 74% were aged 25–64 years, and the mean duration of asthma was 7.9 years. All of the patients were using inhaled short-acting beta agonists; 38% were also taking inhaled corticosteroids and 32% oral short-acting beta agonists; 48% reported night-time symptoms and 52% activity limitations in the past 4 weeks; 42% had at least one asthma exacerbation in the past 6 months. The percentage of patients with controlled, partly controlled, and uncontrolled asthma was 32%, 34%, and 34% respectively. There was no statistically significant difference in asthma control between patients treated with or without inhaled corticosteroids.

The main findings of the study were that less than a third of the patients achieved asthma control, there was low use of long-term control medications and asthma treatment did not adhere to international guidelines. Interventions to improve asthma care and outcomes should focus on revising existing national treatment guidelines to incorporate recommendations from international guidelines for the management of asthma.

Introduction

Asthma is a disease of diffuse airway inflammation caused by a variety of triggering stimuli resulting in partially or completely reversible broncho-constriction.[1] Patients with asthma present with intermittent episodes of wheezing, coughing, and dyspnea.[1,2] Asthma affects more than 300 million people worldwide;[3] although most of these live in industrialised countries, there is evidence that the prevalence of asthma is increasing in low- and middle-income countries.[4]

Asthma is often diagnosed and treated in the primary care setting. A diagnosis of asthma is based on the clinical history of symptoms and pulmonary function tests.[2] In 2006, the Global Initiative for Asthma (GINA) published new recommendations for asthma care based on clinical control; according to these guidelines, patients with good asthma control should experience no/minimal symptoms, no limitations of activities, and reduced frequency of exacerbations.[5] Pharmacological treatment of asthma involves the use of reliever and controller therapies. Relievers are used as-needed for rapid relief of asthma symptoms and these include inhaled short-acting beta-2 agonists (SABAs) and inhaled anticholinergics. Controller medications are taken on a daily basis to prevent asthma symptoms and include anti-inflammatory agents (inhaled corticosteroids (ICS) and leukotriene modifiers) and long-acting bronchodilators (long-acting beta-2 agonists (LABAs)). GINA recommends a stepwise approach to pharmacologic treatment to achieve control of asthma while attempting to minimiseadverse effects.[2]

Studies conducted in several countries have shown that many patients fail to achieve optimal asthma control.[6–8] Poorly controlled asthma can place a substantial burden on patients by leading to limitations in daily activities, school and work absenteeism, hospitalisation, and premature death.[4,6] According to the World Health Organization (WHO), an estimated 250000 people die from asthma every year, mainly in low- and middle-income countries.[9] Barriers to effective asthma management include lack of access to appropriate medical care and poor patient adherence to therapy.[8–12] In Lesotho, asthma control is not routinely assessed using formal tools. The aim of this study was to assess asthma control among adult patients treated in primary care using GINA guidelines.

Methods

A cross-sectional study was carried out at two public primary health care clinics in the Maseru district in Lesotho over a three-month period between March and May 2014. Study participants were adults (≥16 years) with physician-diagnosed asthma and a duration of asthma treatment of at least three months. Patients with respiratory conditions other than asthma were excluded from the study. Convenience sampling was used to select study participants.

Prior to data collection, the aim of the study was explained in Sesotho to all eligible patients and patients gave written informed consent. A pre-designed form was used to collect data: patients were interviewed to obtain socio-demographic data and medical history including duration of asthma, current treatment, and type and frequency of asthma symptoms; medical recordswere reviewed to corroborate information provided by patients. Patients were asked to recall their experiences during

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	Frequency, n (%)
Gender	
Male	19 (38)
Female	31 (62)
Age groups (years)	
16– 24	8 (16)
25–44	18 (36)
45–64	19 (38)
≥65	5 (10)
Mean age at diagnosis (±SD) (years)	36.3 (16.3)
Mean duration of asthma (±SD) (years)	7.9 (7.9)
Symptoms in the past 4 weeks	
Nocturnal symptoms ≥1 time/week	24 (48)
Daytime symptoms> 2 times/week	15 (30)
Limitations of activities, past 4 weeks	26 (52)
Daily activities, n = 50	21 (42)
Work, n = 29	14 (48)
Study, n = 5	2 (40)
Exercise, n = 14	11 (79)
Exacerbations	21 (42)
Hospitalisation	5 (10)

Table 1: Demographic characteristics and medical history (N=50).

Current treatment	Total	Controlled, n (%)[a]	Partly controlled, n (%)[a]	Uncontrolled, n (%)[a]
$SABA_{inh}$	16	7 (44)	6 (38)	3 (19)
$SABA_{inh}$ +ICS	15	4 (27)	6 (40)	5 (33)
$SABA_{inh}$ + $SABA_{oral}$	11	3 (27)	4 (36)	4 (36)
$SABA_{inh}$ + other	8	2 (25)	1 (13)	5 (63)
Total	50	16	17	17

[a]Percentage of controlled/partly controlled/uncontrolled patients in patients treated with the particular drug regimen. ICS, inhaled corticosteroid; inh, inhaler; SABA, short-acting beta agonist.

Table 2: Asthma control in relation to asthma treatment (N=50).

the previous four weeks and to respond to questions about: (a) daytime symptoms; (b) nocturnal symptoms; (c) limitations of activities (including household work, exercise, and interference with work/school); and (d) need for reliever treatment. Asthma control was evaluated using the GINA 2012 guidelines;[2] in our setting, lung function testing was not available and patients were categorised as controlled, partly controlled, and uncontrolled on the basis of the responses to the four items above. Asthma exacerbations were defined as a worsening of symptoms requiring an emergency department visit or an unscheduled visit to the clinic and a short course of oral glucocorticoids.

Data analysis was performed using SPSS version 20.0. The response rate for each variable is presented as a percentage. Fisher's exact test was conducted to examine the relationship between inhaled corticosteroid use and asthma control. A p-value of less than 0.05 was considered statistically significant. Ethical approval to conduct the study was obtained from the Lesotho Ministry of Health Research and Ethics Committee.

Results

A total of 50 patients from the two study sites participated in the study.Table 1 shows the demographic characteristics and medical history of the study participants: 62% were female and 74% were aged 25–64 years; 58% were employed, 10% were students, and 32% were unemployed. Some 14% of the patients had been diagnosed with asthma before the age of 16 years. The majority of the patients identified cold air or weather (88%), and dust (70%), as triggers for their asthma symptoms; other triggers included strong emotions, exercise/intense physical activity, strong odours and food (around 25% each). Almost half (48%) of the study participants had nocturnal symptoms and 30% had experienced daytime symptoms at least twice a week in the past four weeks; 42% reported interference with normal daily activities and 16 out of 34 employed patients and students (47%) had missed work or school due to asthma. Some 42% of the patients reported one or more emergency department/unscheduled clinic visit for the management of asthma exacerbations in the past six months; 10% had had at least one asthma-related hospitalisation in the past 12 months.

Table 2 shows asthma treatment and levels of asthma control among the study participants. The time interval between the previous and current clinic visits was around one month for 60% of the patients, two months for 24%, and three months for 16%. All of the patients were using inhaledsalbutamol as needed;38% were also taking inhaled beclomethasone, 32% oral salbutamol and 6% aminophylline. The frequency of inhaled asthma medication prescription refills was high: 80% of all patients obtained ≥2 refills of inhaled salbutamol and 53% of the patients taking ICS (10/19) had ≥2 refills of inhaled beclomethasone in the previous three months. Almost half (44%) of the patients had run out of their inhaled short-acting beta agonist in the weeks before the current clinic visit. Twelve patients (24%) had been prescribed short courses (5–10 days) of oral glucocorticoids for the management of acute asthma exacerbations at the previous consultation; only one patient was on long-term oral glucocorti-

	Inhaled SABA plus		p value (Fisher's exact test)
	No controller, n/N (%)	Controller therapy, n/N (%)	
Daytime symptoms ≤2 times/week	9/15 (60)	12/19 (63)	1.000
No nocturnal symptoms	7/15 (47)	10/19 (53)	1.000
Controlled asthma	4/15 (27)	5/19 (26)	1.000

Table 3: Asthma symptoms and control in patients using combination therapy (N = 34).

coid therapy. Asthma control was as follows: 32% of all patients were categorised as having controlled asthma according to the GINA criteria; 34% had partly controlled asthma; and another 34% were uncontrolled. Of the patients with controlled asthma, 44% (7/16) were using inhaled SABA alone. When comparing control rates between different treatmentregimens, asthma control was highest (44%) among patients treated with inhaled SABA alone and less than 30% for patients treated with all other drug combinations.

We evaluated asthma symptoms and control among 34 patients treated with combination therapy (Table 3): 56% (n=19) of these patients were taking a long-term control medication (inhaled beclomethasone, irrespective of dose) and 44% were treated with short-acting bronchodilators only (oral salbutamol and/or short-acting aminophylline). There were no statistically significant differences in the prevalence of daytime and nocturnal symptoms between patients treated with or without controller medications; in addition the use of ICS was not associated with asthma control.

Discussion

We performed a cross-sectional study of 50 asthma patients treated at two primary health care clinics in Maseru, Lesotho. Asthma was treated with inhaled short-acting beta-2 agonists alone or in combination with inhaled corticosteroids, oral short-acting beta-2 agonists, and/or oral short-acting methylxanthines. Less than a third of the study participants had controlled asthma. This finding is consistent with results from other studies showing low levels of asthma control in clinical practice.[6,13,14]

In this study, asthma control was highest among patients treated with inhaled short-acting beta-2 agonists alone. Inhaled SABAs, taken as needed for relief of symptoms, are usually effective therapy for mild, intermittent asthma (Step 1 of the GINA Classification of Asthma Severity).[2] Patients with persistent asthma symptoms (Steps 2–5 of GINA) require long-term control medications to prevent asthma symptoms. Nearly 50% of the study participants reported nocturnal awakenings due to asthma at least once per week and 30% reported frequent daytime symptoms. The frequency of nocturnal symptoms is used to categorise asthma severity and control; occurrence of nocturnal asthma indicates poor control of asthma and the need for more aggressive controller therapy.[5,15] Inhaled corticosteroids are the most effective medications for long-term control of asthma; regular use of an ICS over the long term reduces nocturnal and daytime symptoms and the need for inhaled bronchodilators.[2,15,16] In our study however, the use of ICS was not associated with asthma control. Possible reasons for low efficacy of ICS therapy in controlling asthma may include suboptimal dosing of ICS and patient non-adherence to medication.[17–19] Further studies are required to elucidate the reasons for poor asthma control in this setting. In agreement with other studies, we found low use of long-term control medications among the study participants. Studies conducted in various countries consistently show that a significant proportion of patients with persistent asthma symptoms do not receive ICS therapy as recommended.[6,17] Reasons for underuse of ICS include non-adherence to asthma treatment guidelinesby prescribers and high costs/unavailability of the medicines particularly in limited-resource situations.[2,17–20] In Lesotho, asthma medications are provided free of charge to patients in the public sector and inhaled corticosteroids are available for use in primary care. However there has been no recent, formal revision of the national standard treatment guidelines[21] to incorporate recommendations from international guidelines for asthma care. It is therefore possible that the low of use of controller medications in this study is partly attributable to the lack of clear national guidelines for the management of asthma in Lesotho. Future research should explore the adaptation of international asthma management guidelines to the local context of healthcare and the dissemination and implementation of the adapted guidelines.

Poor asthma control can place a burden on the physical, social and professional life of patients.[23] In this study, around half of the patients reported activity limitations and 42% had at least one asthma exacerbation in the past six months. Asthma exacerbations are common in patients with severe and/or uncontrolled asthma; mild exacerbations can be treated at home or in the outpatient setting, however more severe exacerbations require hospitalisation or emergency department management.[23,24] Most exacerbations develop over a period of hours or days; early recognition of deterioration in symptoms can enable patients to initiate timely self-management of exacerbations or seek appropriate medical care.[25] Current evidence-based practice guidelines for asthma management emphasise the importance of patient education and use of written self-management plans to improve health outcomes for patients with asthma.[2,25] Patient behaviours such as compliance to treatment, avoidance of trigger factors, and self-monitoring of asthma control can reduce asthma morbidity and requirements for acute medical care.[28,29] Despite this, studies show that patient adherence to asthma medications and other aspects of self-management such as not smoking is often low.[6,10,14] In the present study, none of the patients were smokers and the majority expressed confidence in their ability to avoid exposure to known asthma triggers;however a significant proportion of the study participants did not take their medication as prescribed. Analysis of refill records for inhaled medications suggested a higher rate of use of inhaled beta agonists and inhaled corticosteroids than reported by patients. Overuse of inhaled reliever medications has been reported by other researchers and is an indication of poor asthma control.[28,29] In contrast to other studies,[17,28] our findings also suggest that

patients took higher doses of inhaled corticosteroids than prescribed. A possible explanation for this may be poor understanding of the effects of inhaled corticosteroids in asthma; nearly a third of the patients using a combination of ICS and inhaled SABA reported using inhaled corticosteroids more frequently when they ran out of reliever medications. There is a need for educational interventions aimed at increasing patients'asthma knowledge and self-management skills.

This study has a number of limitations. Firstly, pulmonary function tests were not done and asthma control was ascertained based only on self-report of symptoms, which may be subject to recall bias or may be under- or over-reported. Secondly, there was insufficient data to determine asthma severity and therefore appropriateness of current pharmacotherapy for the majority of the patients. Finally, the use of convenience sampling and a small sample size limitthe extent to which the findings can be generalised to asthmatic patients in Lesotho. The strengths of the study include the prospective study design, a high response rate, and inclusion of more than 80% of the patients who presented for asthma treatment at the two clinics during the study period. The results of the present study provide a useful insight into asthma control and current clinical practice in the management of asthma in typical primary care settings in Lesotho.

In conclusion, less than a third of the study participants achieved asthma control as defined by GINA guidelines. Reasons for poor asthma control in this study may include low use of long-term asthma control medications and patient non-adherence to treatment. Interventions to improve asthma care and outcomes in this setting should include provision of patient education to improve asthma self-management, regular monitoring of asthma symptoms and modification of treatment based on level of control and in accordance with recommendations of international guidelines for the treatment of asthma.

Author Declaration

Competing interests: none.

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