Abstract

70 patients presented with acute asthma exacerbation requiring nebulised bronchodilator treatment at the emergency department of a teaching hospital in Kuala Lumpur, Malaysia, were interviewed over a two-week period in July 2001. The results showed that 45 (64%) patients had not been educated on the nature of asthma; 30 (43%) had not been advised on preventive measures or avoidance of triggers; 54 (77%) were not advised about the medications used and their side effects; 42 (60%) patients did not know the difference between reliever and preventive medications; 37 (53%) were unable to recognize features of worsening asthma and 68 (97%) were not told about the danger of non-prescribed self-medication or traditional medications. Only six (9%) patients were using peak flow meters and were taught self-management plans. The multiple regression results suggest that patients who were followed up at teaching hospital based clinics were better educated on asthma. In conclusion, asthmatic patients are still not educated well about their disease. Health care providers need to put more emphasis on asthma education so that the number of emergency room visits can be reduced. Asia Pac J Public Health 2004; 16(1): 45–49.

Keywords: patient education, acute asthma exacerbation, emergency department.

How Well were Asthmatic Patients Educated about Their Asthma? A Study at the Emergency Department

PY Lee¹, MBBS, M Med (Fam Med)
EM Khoo², MRCGP, AM

¹Faculty of Medicine and Health Science, University of Malaysia Sarawak, Kota Samarahan, Sarawak, Malaysia
²Department of Primary Care Medicine, Faculty of Medicine, University of Malaya Medical Centre, Kuala Lumpur, Malaysia.

Introduction

Bronchial asthma is one of the commonest diseases that affect both adults and children. It has profound medical and social implications, in terms of morbidity and mortality and the resultant loss of productive working hours. The prevalence of asthma is increasing worldwide. The mortality and morbidity from asthma appear to be increasing despite changes in medical practice and advances in the treatment of asthma over the years¹⁻³.

Many asthmatic patients use the Emergency Department as a first contact for relief of acute symptoms⁴. A study in the Emergency Room of the University of Science Malaysia, showed that patients with acute asthma constituted 16.3% of all adult and paediatric medical cases seen in the emergency room during the study period⁵.

The relevant role of education in the control of asthma has been stressed for a long time. The guidelines on adult asthma management in Malaysia⁶ recommend educating the patients and their families. Important areas that should be included in asthma education are as follows:

1. the nature of asthma,
2. preventive measures or avoidance of triggers,
3. medications used and their side effects,
4. proper use of inhaled medications,
5. proper use of peak flow meters
6. the understanding of the difference between reliever and preventive medications,
7. features of worsening asthma and its recognition,
8. self-management plan for selected, motivated patients or parents, and
9. the danger of non-prescribed self-medications including certain traditional medicines.

Patient education enables the patients or their parents to self-modify their therapy without the need to consult their physician. It gives the patients autonomy to manage their own disease. Gibson et al⁷, in a meta-analysis of 22 randomised controlled studies, showed that asthma self-management education improves health outcomes for adults with asthma. Greater improvements were noted when the education was supplemented with written action plans. The use of peak expiratory flow rate (PEFR) to guide self-management plans is recommended by most guidelines⁸⁻¹⁰ and studies have shown that home peak flow monitoring improved asthma outcome¹⁰⁻¹². In addition, educational programs have also been shown to have favourable cost-benefit ratios due to the reduction in the number of patients being hospitalised and a decrease in the length of hospital stays¹³. Despite
these, various studies have found a lack of emphasis on patient education. Peak flow monitoring has been under-used in most asthmatic patients. A study in Singapore showed that almost a third of the patients who consulted the emergency department lacked understanding and recognition of their illness. Most patients who attend the emergency department have poorly controlled asthma that could lead to increased morbidity and mortality. This problem is potentially preventable with proper assessment, treatment, supervision and good patient education.

Inadequate patient education can contribute to an increasing number of asthma attacks and frequent emergency department visits for acute treatment. This study aimed to examine the education received on asthma by patients who attended the emergency department with acute asthmatic attacks in order to provide a better understanding of this group of high risk patients.

Subject and Methodology

This was a descriptive cross sectional study conducted at the emergency department of a teaching hospital in Kuala Lumpur, Malaysia. All patients above 12 years old with acute exacerbation of bronchial asthma requiring nebulized bronchodilator treatment were recruited for this study. Patients with chronic obstructive pulmonary disease, whose diagnosis of asthma were uncertain or who have severe asthma needing immediate resuscitation and admissions were excluded from the study.

The study was conducted over a two-week period in July 2001, round the clock by the investigator and a research assistant (RA) on consecutive patients. A face-to-face interview, using a structured questionnaire was carried out before the patients were discharged from the emergency department. The questionnaire was constructed from a review of the literature followed by discussion with peers and specialists in the field of asthma care for content and face validity. The questionnaire consisted of seven sections with questions on the patient’s demographic data, smoking status, duration of asthma, severity of asthma, current medications, presence of regular follow-ups, frequency and place of follow-ups and whether the patients were educated the nine important areas recommended by the Malaysian Thoracic Society guidelines for adult asthma management. It was piloted to ensure internal consistency between the investigator and the RA.

Definition

In this study, asthma severity was classified according to the American National Asthma Education and Prevention Programme (NAEPP), Report II 1997 (Table 1).

In the questionnaire, the patient would get a score of one for each positive response to the information on education and a score of zero for a negative response. A better level of education of the disease was defined as those scores that were equal to or higher than the mean score of the study population.

Data analysis

Data collected was analysed using SPSS version 16.0. Univariate regression analysis was used to assess the relationship between one factor with a dependent variable (did not take into account confounders) while multiple linear regression was used to assess the relationship between multiple independent variables or predictors and a dependent variable, educational scores while accounting for potential confounders, p<0.05 was taken as the significance level.

Results

Demographic data

A total of 70 asthmatic patients, 25 (36%) men and 45 (64%) women were recruited. The mean age (±SD) of the patients was 42 years (±18) (range, 12-80 years). There were 31 (45%) Malays, 15 (21%) Chinese, 23 (33%) Indians and one (1%) of other races. The mean (±SD) duration of asthma was 16 (±6) years. Most of the patients were non-smokers 64 (91%). However, among these non-smokers, 31 (48%) had histories of passive smoking either at home or at their work places or both.

Severity of asthma and current asthma medication

Using the NAEPP classification of asthma severity, 24 (34%), 12 (17%), 15 (21%), 19 (27%) patients were in step 1, 2, 3, 4 of asthma severity respectively. 57 (81.4%) were using inhaled salbutamol via metered-dose inhalers (MDI). However, less than half of these patients were using

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inhaled corticosteroids (ICS), via MDI. Half (52%) of those on inhaled corticosteroids were on follow-ups in asthma clinics. Half of the study population was taking oral medication regularly. Salbutamol was the most frequently prescribed oral medication (30%).

**Patient follow-up**

32 (46%) patients were not followed up for their asthma. Among the 38 (54%) who had regular follow-ups, 17 (44%), 5 (13%), 6 (16%), 5 (13%), 4 (11%) and 1 (3%) had their follow-ups at the asthma clinic and general outpatient clinic of the teaching hospital, with general practitioners, at health centres, at other hospitals and with their family physicians respectively. The average interval of follow-ups was two and a-half months (range was from weekly to six monthly).

**Education of patients regarding their asthma**

As shown in Figure 1, overall, the education received on asthma was poor in these patients. Nearly two thirds of the patients were not educated on the nature of asthma and did not know the difference between reliever and preventive medications. About half of them, had not been advised on the preventive measures or avoidance of triggers and were unable to recognize features of worsening asthma. 54 (77%) patients were not told of the medications used and their side effects. 68 (97%) of them had not been told about the danger of non-prescribed self-medications or traditional medications.

As defined in the methodology, 46 (66%) patients were considered to have been better educated about asthma while 24 (34%) were considered poorly educated. However, the mean education score for the population was only three out of nine points. The areas that were better covered were the proper use of inhaled drugs, where 54 (77%) patients were well informed; 38 (54%) patients were aware of the proper use of the peak flow meter; and 40 (57%) patients were aware of the preventative measures or avoidance of triggers. Despite this, only 6 (9%) patients were using peak flow meter and were taught self-management plan.

**Patient's level of education on asthma and its associations**

Among the poorly educated patients, 17 (71%) had not had any follow-ups. Among the better-educated patients, 31 (67%) had regular follow-ups while 15 (33%) had not. 20 (77%) of the better-educated patients had their follow-ups in the hospital-based clinics while 6 (23%) were on follow-ups in community-based clinics. Using univariate regression, patients who were on regular follow up had a positive effect on education scores (B=2.056, SE=0.474, beta=0.465, p≤0.01). Similarly, being followed up at teaching hospital based clinics also had positive effect on education scores (B=2.705, SE=0.499, beta=0.571, p≤0.01).

21 (58.3%) of patients in step 1 and 2 severity and 25 (73.5%) of patients in step 3 and 4 severity of asthma seemed to have better education scores. However, severity was not a statistically significant factor predicting education scores using univariate analysis. The mean duration of asthma for the better-educated patients was 18 (±12) years and for poorly educated patients 13 (±11) years. 43 (67%) of non-smokers and 83 (50%) of smokers were considered better educated about their disease. Again, using the univariate analysis, duration, smoking and age were not found to have any significant relationship with patients’ education score on asthma.

Using multivariate stepwise regression, being followed up in the teaching hospital based clinics is the only significant predictor for patient having better education scores on asthma. (R²=0.32, adjusted R²=0.31, df=1, p<0.01, B=2.69, SE=0.47, Beta=0.57, p≤0.01)

**Discussion**

This study showed that many patients did not know the nature of asthma, avoidance of triggers, drugs used, the function of medicines and side effects of drugs. They also lacked...
knowledge in recognizing features of worsening asthma, in the danger of self-medication and taking traditional medications. It revealed that the high-risk asthmatic patients who attended emergency visits for acute attacks were still inadequately educated on their disease. This finding was similar to the findings of other studies.

Although education on the proper use of inhaled drugs seemed good, patients' inhalation technique had not been evaluated. A previous study done at the same hospital showed that only 28.8% of patients had proper inhaler technique. The evaluation of proper inhalation technique during follow up is as important as teaching the patient who is going to be started on inhalers.

About half of the patients were taught the proper use of peak flow meter and most of them mentioned that they were taught during emergency room visits but not in the clinics. Only 9% of patients used home peak flow meter and were advised on self-management plans. Although, asthma self-management plans improves health outcomes, home peak flow monitoring and self-management plans were clearly still being under-utilized. The role of home peak flow monitoring is especially beneficial to patients who had frequent severe exacerbations requiring hospital admission (> 2 per year). This should be emphasized especially in those patients who are motivated.

We found that patients who were on follow-ups in teaching hospital-based clinics (asthma or outpatient clinic) were better educated on their disease and this is the only predictor of patients' education scores. It appears to reflect that teaching hospital clinics were providing more patient education. Studies had found that education programme for patients significantly improved lung function and reduced the numbers of hospitalisations and patient visits to emergency department. It is desirable for the emergency department to set up a protocol of care to initiate patient referral to the appropriate clinic for management and education so that the number of acute attacks and hence emergency room visits will reduce. There is also a need for all health care providers, especially those in the community-based clinics where the bulk of the patients are seen, to promote asthma education to patients and their families.

The level of patients' education on asthma was not found to be related to their age, disease duration and severity, or their smoking status. These could be due to the fact that education scores were not weighted and most of these patients were found to be mainly better educated on the use of inhaled drugs and peak flow meter, and avoidance of triggers. Other aspects of information such as the nature of asthma, drugs use and their side-effects, the difference between reliever and preventative medications, recognition of features of worsening asthma, danger of non-prescribed self medications and the use of self treatment plans were lacking.

There are a few limitations to the study. Firstly, the sample size was small and might not be representative of the population. Secondly, the population studied were from the teaching hospital and hence are skewed towards those who attended specialist clinics for their asthma care which does not represent the general population where the majority would be under the care of primary health care physicians. A larger study including asthma patients who attend out patient clinics, private clinics and health centres may be necessary to ascertain the size of the problem. Thirdly, interviewing patients in the emergency room has many inherent problems, in that the respondents' interest in participating and the accuracy of their account may be compromised by their acute condition.

Conclusions

Asthmatic patients are still not been educated well about their disease. As education is essential in improving patient care and ensuring patient's cooperation and compliance with therapy, efforts should be made to emphasize on this. Patient education should address understanding of the disease, preventative measures, medications, use of the peak flow meter, self-management plans, and effective inhaler use.

Any acute asthma episode should lead to a review of the patient's management and education. As the emergency department plays an important role on acute asthma management, a protocol and asthma care plan should be established where patients presenting with acute attacks can be reviewed and referred for appropriate follow-ups in clinics where patient education can be conducted and enhanced.

References