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Audit on the Management of Asthma Control among Adult Patients Attending a Primary Care Clinic

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Abstract

Asthma is a common chronic disease seen at the primary care clinics. It is important that healthcare professionals diagnose and manage asthma confidently.

There is a lack of studies regarding the quality of asthma management practices in our primary healthcare clinics in Malaysia. The purpose of this audit was to ascertain the process of care of asthma patients as well as the asthma management practices. Data were retrospectively collected on asthma patients aged >18 years from two primary care clinics in the Gombak district over a six-month period between January 2018 and Jun 2018. This audit was conducted using a universal sampling method and only patients who had received asthma medication in the prior 12 months and had follow up at these primary care clinics were included. The exclusion criteria included patients who were pregnant, patients with occupational asthma, exercise-induced bronchoconstriction, ACO (Asthma–Chronic obstructive pulmonary disease Overlap), those with acute asthma attack requiring referral to tertiary centre and those co-managed by respiratory clinics or other health care centers. Both clinics used the UNIMEDS Electronic Medical Record (EMR) system and did not have asthma educators, asthma registry nor dedicated asthma clinics. Therefore, this was a retrospective, electronic audit of asthma care delivered by doctors (including family medicine specialists and medical officers). Results showed that only 42.3% of these primary care doctors documented asthma control parameters. Out of this, only 18.7% of patients were well controlled. Inadequate assessment of asthma documentation control among the doctors was a main concern that was identified in this audit. The issues identified in this audit were addressed and strategies formulated to improve the quality of asthma management carried out. These include providing electronic guidelines of bronchial asthma in each consultation room, encouraging the use of asthma management booklet by both doctors and patients and improving team work whereby pharmacists help in asthma education as well inhaler technique assessment.

Introduction

Asthma is a common chronic disease seen at the primary care clinics worldwide. It is triggered by external stimuli in a genetically predisposed person and results in inflammation of the airways. The global prevalence of clinical asthma (or treated asthma) was 4.5% in 2002 [1]. The prevalence of clinical asthma varies from 1.0% in Vietnam to 21.5% in Australia [2]. In Malaysia, the prevalence of asthma in adults (18 years and above) was 4.5% based on the National Health and Morbidity Survey 2006 [3].

It is utmost important for doctors to diagnose and manage asthma adequately as it is associated with increased mortality and morbidity. There are many local and international asthma guidelines that are available to facilitate diagnosis and to ensure standardised management of asthma worldwide. Studies have shown that up to 53% of asthma patients remain poorly controlled although guidelines are readily available at most primary care clinics [4]. This poor outcome has been attributed to gaps between recommendations of the asthma guidelines and clinical practice by the doctors. The UK National Review of Asthma Deaths revealed that 46% of asthma related deaths could have been prevented if the attending doctors had adhered to the recommendations of the asthma guidelines [5].

The goal of asthma management should be aimed at achieving good asthma control and maintaining symptom control [1,6-8]. Therefore, it is important to audit the primary care clinics' adherence to three vital asthma management practices recommended by all international and local guidelines. The three management practices include the assessment of asthma control, initiation of

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asthma controller therapy and provision of asthma action plans.

The first management practice is good asthma control. A patient is said to have stable asthma when there is absence of symptoms, no limitations of activities and no use of reliever medication in the last four weeks [1,6-8]. Alternatively, stable asthma is classified when the ACT scores are 20-25 [1,6-8]. Asthma control can be assessed either by asking questions recommended by Global Initiative for Asthma/ GINA and should be assessed at each visit [6].

The second management practice is that pharmacotherapy should be individualised to the patient's asthma control. Asthma treatment can be adjusted according to the severity of disease and symptom control. It may be stepped-up if needed and stepped down once symptoms are controlled6. Early initiation of Inhaled Corticosteroids (ICSs) as a preventer medication is very important especially among the poorly controlled asthma as it improves quality of life and reduces exacerbations and mortality. Similarly, addition of a Long-Acting Beta Agonist (LABA) in patients with poor control on an ICS improves lung function and reduces rescue bronchodilator use and exacerbations [9,10].

The third management practice is that all asthma patients should be receive self-management education and Written Asthma Action Plan (WAAP) is the preferred option [1,6]. WAAP guide's patients in making short-term adjustments based on symptoms and/or peak expiratory flow readings. WAAPs have been shown to reduce hospitalisations, absenteeism and improve quality of life [6-9].

There is insufficient published data regarding the quality of asthma management, specifically regarding gaps across the three important asthma management practices in our primary healthcare clinics in Malaysia. The audit findings will aid to formulate suggestions and strategies plans to improve the asthma management in primary care clinics.

Clinic Setting

This audit was conducted in two primary care clinics that are affiliated with a medical university located in the state of Selangor. These clinics are in the district of Gombak which has a total population of 682,996 people. Both clinics are situated in the ground floor of their respective buildings in Sungai Buloh and Selayang. Both have ready access to radiology and easy referral to the respiratory physicians. There is a spirometry machine on the first floor of the same building for the common use of both primary care and respiratory doctors. The primary care clinic receives an average of 70 patients per day. There are seven consultation rooms with two FMS and seven medical officers. Following the family doctor concept, asthma "follow-up" patients were given a specific appointment to see a scheduled doctor who follows them up throughout their care. The walk-in asthma patient who attended the clinic would be seen by any of the doctors on duty on that day.

Methods

Study design

This was a retrospective, electronic audit of asthma care delivered by doctors (including family medicine specialists and medical officers) across two primary care clinics in Sungai Buloh and Selayang. This audit was conducted from the 1st of January 2018 until 30th of June 2018. This six months' study period was perceived as adequate for data collection to include clinics run by Family Medicine Specialists (FMS), Medical Officers (MO) and a mixed sample of follow-up for asthma patients and acute walk-in patients. Both clinics used the UNIMEDS Electronic Medical Record (EMR) system and did not have asthma educators, asthma registry nor dedicated asthma clinics. Asthma patients were identified through a EMR search profile including: 'asthma' in the typed chartnotes, use of asthma medications in the prescribing notes and the use of the International Classification of Diseases (ICD) [10] billing code for 'asthma' within six months' study period (excluding patients with an overlap diagnosis and pharmacotherapy chronic obstructive pulmonary disease).

Table 1: Sociodemographic of the respondents. (N=183).

Characteristics	N %
Age	
< 30	17.9
31-40	13
41- 50	10.6
51-60	26.8
> 60	31.7
Gender	
Male	70.7
Female	29.3
Ethinicity	
Malay	91
Chinese	2
Indian	5
Others	2
Smoking status	
Smoker	70.7
Non-smoker	26.8
Not documented	2.5
Use of spirometry in the diagnosis of asthma	
Spirometry performed	14
No spirometry	31
Unrecorded	55
Family history of asthma	
With family history	13.0
No family history	9.8
Unrecorded	77.2
Duration of asthma	
0-5	11
5-10	5
> 10 years	22
Unrecorded	62

Sampling and recruitment

The study was conducted using a universal sampling method. Asthma patients who attended the clinic during the study period (1st of January 2018 until 30th of June 2018) were included if they were above the age of 18 years, diagnosed with asthma, had been on asthma medication in the prior 12 months and had follow up at this primary care clinic. The exclusion criteria included patients who were pregnant, patients with occupational asthma and those co-managed by respiratory clinic UiTM or other health care centers. This study also excluded patients with exercise-induced bronchoconstriction, ACO (Asthma–Chronic obstructive pulmonary disease Overlap) and those with acute asthma attack requiring referral to tertiary centre.

Defining standards for the management of asthma control

The standard for this audit was defined according to the recommendations of the Global Initiative for Asthma (GINA) 2017. The clinical audit criteria and standard for the structure component was based on the Management of asthma at primary care level: training module for health care providers (MOH) [11]. The standards for the audit were derived from WONCA poster by Khasnur et al., [12] and another audit study by Levy et al., [13].

Process of data collection and statistical analysis

Data on demography and relevant clinical information were

Table 2: The standards for clinic structure and the achievement according to the set criteria.

	Standards for process	Set criteria	Achievement to target criteria
1	All patient with bronchial asthma should be registered in asthma Registry	Yes	No
2	Primary care clinic should have dedicated asthma team	Yes	No
3	Access to facilities with spirometry is available	Yes	Yes
4	Peak expiratory flow (PEFR) meter and mouthpiece is available in pre-consultation and each consultation rooms	Yes	No
5	PEFR rate nomogram is available in pre-consultation and each consultation room	Yes	Yes
6	Guideline of bronchial asthma management (manual/electronic) is available in each consultation room	Yes	No
7	Defaulter tracing system is available	Yes	No
8	Asthma record book is available	Yes	Yes

accessed via the electronic medical record system. All relevant data were recorded in the audit data collection form and was subsequently entered into the SPSS version 17.0 for analysis. The results of the audit were presented and made known to both family medicine specialists and medical officers. The recommended suggestions as improvements were made.

Results

A total of 496 asthma patients were identified from Sungai Buloh and Selayang primary care clinics. 123 patients who fulfilled the inclusion and exclusion criteria were included in the study.

In Table 1, the percentage of male patients were 70.7% and female patients were 29.3%. The majority were Malays followed by Indians and Chinese (Table 2-4).

Discussion

The study was carried out in real-world academic and community primary care settings in an urban area.

The positive outcome from this study was that both clinics had access to the spirometry. Spirometry has an important part in the diagnosis of asthma and in the management of asthma. It is also vital as studies have shown discrepancy between clinical symptoms and the degree of obstruction on spirometry.

There were several issues identified from this study that needed to be addressed. However, it must be made known that chart review methods are susceptible to underestimation of care due to poor clinician documentation. Although, the spirometry was available at this primary clinic, only 13.8% of the doctors utilised the spirometry to make a diagnosis of asthma. Study by Craig et al revealed that up to 27% of primary care doctors who used symptoms alone for the purpose of diagnosis underestimated asthma severity [14]. Better utilisation of spirometry may aid the doctors in diagnosing new cases of asthma accurately and improve asthma outcomes. Primary care doctors at both clinics should be given training and guidelines on the use of spirometry, interpretation of the results and on how the results can assist in the management of asthma. Studies in the past have shown that interpretation of spirometry by family physicians following training was almost equivalent to that of pulmonologists [14].

Secondly, the assessment of asthma control was poorly performed by the doctors. Clinically, the assessment of asthma control can be performed by routinely asking the patients regarding daytime, nocturnal symptoms, activity limitations and the frequency of use of the rescuer inhaler. All these symptoms were poorly documented in both clinics. One of the reason s for this could have been because there is neither designated asthma clinic nor team. As both are general walk in clinics, patients present with multiple comorbidities and it may

Table 3: The standards for each clinic process and the percentage achievement according to the set criteria.

	Standards for process	Set criteria (%)	Achievement to target criteria (%)
1	Lung function test (spirometry) result at diagnosis is documented	70	13.8
2	Smoking status is documented once at entire clinic visit	8.3	29.2
3	Daytime asthma symptom is documented	83	30.9
4	Limitation of daily activities is documented	75	29.3
5	Nocturnal symptom is documented	62	36.6
6	Use of reliever is documented at each clinic visit	60	39.2
7	Presence of exacerbation is documented at each clinic visit	62	44.7
8	ACT score is documented in each clinic visit	70	29.3
9	PEFR reading is documented at each clinic visit	64	17.9
10	Expected PEFR rate is documented once at entire clinic visit	60	17.9
11	Assessment of inhaler technique is documented	80	11.4
12	Recommendation for asthma diary is documented	12.9	18.0
13	Asthma Action Plan is given and documented	26	16.3
14	Appropriate stepwise approach is followed and documented in each clinic visit	80	41.8
15	Advise to quit smoking in asthma patient who smoke	34	14.2
16	Appointment is given and documented	100	99.2

Table 4: Level of asthma control based on GINA guidelines.

Levels of control based on:	Percentage of well controlled asthma patients (%)	Percentage of partially controlled asthma patients (%)	Percentage of uncontrolled asthma patients (%)	No documentation of asthma control (%)
GINA	18.7	19.5	4.1	57.7
ACT	22.8	4.9	1.6	70.7

be time consuming for the doctors to document all the symptoms. It may be more effective to provide a symptom check list form for assessment of asthma control in every consultation room. Utilisation of the Asthma Control Test (ACT) and usage of asthma record book may aid in better asthma control assessment [1,6-9].

Thirdly, the inhaler technique assessment was poorly documented in both clinics. As primary care clinics consist of a team of healthcare personnel, it is of utmost importance to include the other team members especially the pharmacist for inhaler technique counselling. Nurses can be trained as asthma educators in the management of asthma in primary care clinics and this have demonstrated positive impact on patient outcomes. The use of Chronic Care Model (CCM), as a framework for the design and implementation of interventions, improves adherence to ICS in asthma.

Fourthly, Written Asthma Action Plan (WAAP) and the use of peak flow meters was not being utilised effectively in both clinics. The evidence in favour of supported self-management for asthma is overwhelming. Empowering patients with WAAP halves the risk of hospitalisations, reduces emergency and unscheduled visits and improves asthma control.

Therefore, it is vital to establish special clinics for patients with asthma under the supervision of designated asthma team. Training the healthcare personnel to perform the spirometry and utilise it in the management of asthma is crucial. The staff also needs training in the use of self-management tools. The authors concluded that the pressures of routine practice, and the lack of commitment from the organisation to supporting self-management made it impossible for the nurses to develop and consolidate their skills has to invest in resources (such as information and template action plans) which are easily accessible to the clinicians as and when they are required in the course of routine practice.

Limitations

Chart review methods are prone to underestimation of care due to poor clinician documentation and therefore may not reflect the true state of clinical practice. Also, completion of the audit cycle, by implementing the recommendations and re-auditing, is required and important.

Conclusion

This study has identified several gaps in the management of asthma in primary care clinics. The recommendations found across local and international asthma guidelines should be adhered to ensure that patients are well managed. This is important to reduce the mortality and morbidity associated with poorly controlled asthma. Therefore, it is recommended to have a designated asthma team who are well trained in the use of spirometry and are able to perform assessment of asthma control at every clinic visit. Patients also must be empowered with self-management tools like written asthma action plan. These strategies are very vital to overcome the gaps that were identified in this study.

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