COMMENTARY ARTICLES

Acceptability of applying asthma action plan for asthma patients at a hospital in Hochiminh City, Vietnam: an implementation research

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ABSTRACT

Objectives: The asthma management strategy at respiratory departments in Vietnam so far does not include the implementation of an asthma action plan (AAP). This study aimed to implement an AAP in the hospital and analyze the acceptability for the implementation procedures of patients, clinicians and asthma management units.

Methods: The implementation consisted of 2 phases. Phase 1 was a cross-sectional design that combined quantitative and qualitative methods to assess the asthma control and analyse potential obstacles of the hospital for AAP implementation. Phase 2 was a pre-experimental design to assess the acceptability in implementing the APP. Asthma control was assessed by GINA's criteria. Implementation strategies included interventions at both organization (issued a procedure and a guideline of consulting the AAP for patients) and individual levels (trained doctors in counseling and monitoring of AAP for patients; provided instruction leaflets of APP for patients).

Results: The proportion of asthma sufficient control was 59%, partial control was 30.8%, and insufficient control was 10.2%. Most of obstacles related to asthma management and control were of health facility, such as no concrete procedures in monitoring, insufficiency of infrastructure, overload of patients. Implementation strategies of AAP in this study got the acceptability of patients, clinicians and asthma management units.

Conclusion: The study showed the importance of deployment of AAP for asthma patients in Vietnam hospitals. It is essential to provide more staffs for the asthma and COPD management units, especially trained nurses.

Keywords: Asthma Action Plan; implementation research; Vietnam, acceptability; asthma control.

INTRODUCTION

According to the Global Asthma Report, asthma affects about 300 million people worldwide by 2005, and it is estimated that the number of asthma patients will be about 400 million by 2025 (1, 2). In Vietnam, asthma has been one of the common respiratory diseases. A survey in 2010 identified the prevalence of asthma in adults was 4.1%, of which, the prevalence of asthma in men was 4.6%, in women was 3.6 % (3).

Despite the availability of different treatments, data suggest that asthma control in patients remains low. A key element of this problem is that neither the doctor nor the patient has assessed the level of asthma control and treatment correctly. Thus, the Global Initiative for Asthma (GINA) was created in 1993 aiming to raise the awareness of asthma among health professionals, public health authorities and the whole community. The aim of GINA is to improve asthma prevention and management through worldwide coordinated

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efforts. The Global Strategy for Asthma Management and Prevention of GINA extensively revised in 2014 has provided a comprehensive and appropriate approach to manage asthma in appropriate ways for each local and individuals (4). In this strategy, the asthma action plan (AAP) is a crucial strategy to help patients control asthma better (5).

Vietnam has been a member of GINA since 2001. The application of GINA's global asthma management strategy to asthma treatment in Vietnam has a great achievement in improving disease control and the quality of life for asthma patients. However, the asthma management strategy at respiratory departments/centers so far does not include the implementation of an AAP. This could cause failure of asthma control for patients. Indeed, a study of Hanh TH found that only 39.7% of asthma patients achieved sufficient asthma control (3).

The GiaDinh People Hospital has set up a Clinic for Asthma and Chronic Obstructive Pulmonary Disease (COPD) Management since 2007. The GINA's asthma management strategy has been applied in this Clinic, but the AAP has not been implemented yet. Annual reports of the hospital have shown that there have been about 500 emergency hospitalizations for acute asthma attacks, 300 inpatient, and about 50 cases requiring treatment in intensive care units. This large number of uncontrolled asthma cases has brought a huge burden of healthcare services to the hospital. Therefore, it is needed to implement AAP for asthma patients that are appropriate with current resources of the hospital to have better asthma control. This study aimed to implement an AAP in the hospital and analyze the acceptability for the implementation procedures of patients, clinicians and asthma management units.

METHODS

Design, sample size and sampling methods

This is an implementation research with 2 phases. Phase 1: We used a cross-sectional design that combines quantitative and qualitative methods to assess the asthma control and analyse potential obstacles of the hospital in the implementation of AAP. The quantitative part included 156 asthma out-patients. This sample size was calculated by using the formula of estimating a proportion of sufficient asthma control for adult patients. The reference proportion was 39.7% from a study of Hanh TH et al (3). Qualitative part included 8 in-depth interview (IDs) with hospital managers, clinical practitioners, nurses, and technicians and 02 focus group discussions (FGDs) with 2 groups of 5 asthma patients (one group of sufficient and one of insufficient asthma control).

Phase 2: We used a pre-experimental design that consists of a post-intervention evaluation without a control group to assess the acceptability of implementing the APP by using qualitative methods. The implementation strategy includes: (i) Organization level (hospital): issuing a procedure of consulting the AAP for patients and a guideline of AAP for patients; and (ii) Individual level: training 8 doctors of the Clinic for Asthma and COPD Management in counseling and monitoring of AAP for patients; and providing instruction leaflets of APP for 19 patients. IDs and FGDs were conducted after these interventions.

Outpatients with at least 6 months of management in the Clinic were conveniently selected into the study. All health staff were subjectively selected aiming to achieve the best information about the current situation of the hospital in managing asthma patients and the implementation procedures in this study.

Definitions

Asthma control was assessed by GINA's criteria. A patient was assessed as a "sufficiently controlled asthma" as answering "no" to ALL questions about symptoms in the past 4 weeks (i.e. 4 weeks before the interview). These questions include: daytime symptoms more than twice a week, any awakeness at night due to asthma, a withdrawal of medication over 2 times per week, and the restriction of any regular activity due to asthma. A patient was assessed as "partially controlled asthma" as answering "yes" to 1 or 2 of these 4 questions. A patient was assessed as "uncontrolled asthma" as answering "yes" to 3 or 4 of these 4 questions.

Analysis methods

Descriptive analysis such as frequency and proportion was used in this study. Qualitative information was analysed by themes of the study

Ethical issues

The study was approved by the IRB of Hanoi University of Public Health with the Decision No. 307/2019/YTCC-HD3 (date issued 14/5/2019). All quantitative and qualitative data was coded to make it anonymously.

RESULTS

Asthma control

Table 1. Characteristics of asthma patients in the study

Characteristics		n	%	Characteristics		n	%
Gender	Male	34	21.8	*Comorbid diseases*	Allergic rhinitis	18	11.5
	Female	122	78.2		Indigo	2	1.3
Age groups	≤40	12	7.7		Sinusitis	5	3.2
	>40	144	92.3		GERD	7	4.5
Education	≤ primary school	19	12.2		Anxiety	1	0.6
	Secondary school	40	25.6		Hypertension	37	23.7
	Highschool	64	41		Others	86	55.1
	>highschool	33	21.2				
Alergy history	Yes	109	69.9	*Alergy types*	Cigarette smoke	42	38.5
	No	47	30.1		Fuel smoke	13	11.7
Smoking status	Never	128	82.1		Dust	30	27.5
	Ever smoke	25	16		Change of weather	16	14.7
	Current	3	1.9		Fur (dog, cat)	4	3.7
Overweight (BMI≥25)	Yes	35	22.4		Meal	11	10.1
	No	121	77.6		Strong smell	41	37.6

Note: GERD: Gastroesophageal reflux disease

Among 156 asthma patients in the study, there were 122 females (78.2%) and 34 males (21.8%). One hundred and forty four patients aged 40 and over (92.3%). The prevalence of current cigarette smoking was low, only 1.9%.

Table 1 also showed that 109 patients (69.9%) had an allergic history. Among these patients with allergic history, allergy to cigarette smoke accounted for the highest rate - 38.5%, followed by strong smell - 37.6%, and dust - 27.5%. There were 35 patients (22.4%) with a BMI of 25 and over.

Table 2. Actions of consultation in a regular clinical examination of asthma patients at the hospital

Actions	N	%
Doctors explain the diagnosis	150	96.2
Doctors explain the results of spirometry	140	89.7
Doctors explain all drugs in the prescription	153	98.1
Doctors/Nurses give instructions of using sprays and inhalers	155	99.4
Doctors/Nurses give instructions of preventing from risk factors	140	89.7
Doctors/Nurses consult to quit cigarette smoking	25	1
Doctors/Nurses instruct AAP	0	0
Doctors/Nurses consult about comorbidities	44	28.2
Patients know about AAP	2	1.3

Table 2 illustrated that most patients got explanations from doctors or nurses about the diagnosis, the results of spirometry, the use of sprays and inhalers... However, only 28.2% of patients received advices of comorbidities and especially no patient was instructed on AAP
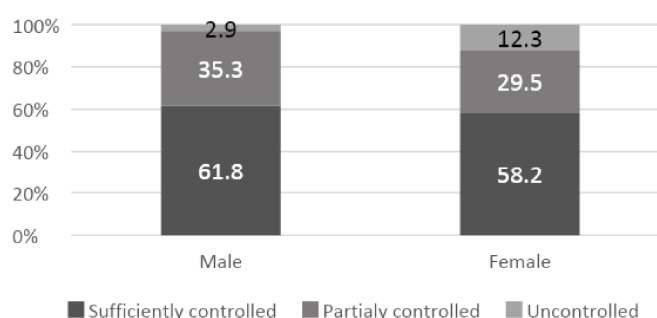

Figure 1. Proportion of asthma control levels

We used criteria of GINA in assessing levels of asthma control of patients at the beginning of this study when patients were recruited, the results identified that 92 of 156 patients (59%) were classified as sufficient control, 48 patients (30.8%) were classified as partial control and 16 patients (10.2%) were insufficient control. More detailed, Figure

1 showed the proportion of uncontrolled asthma among females was higher than that among male (12.3% compared to 2.9%).

Potential obstacles of asthma management and control

The hospital has no concrete procedures in monitoring asthma patients

The hospital in fact has standard operating procedures (SOP) in managing all activities of medical examination and treatment at the outpatient department. These SOPs make both health staff and patients can follow all steps of medical examination. In addition, the hospital regularly updates treatment guidelines for some diseases, including asthma. However, the hospital has neither procedure nor material for monitoring asthma patients to make them have good treatment adherence and better disease control. Health staff only use paper-based medical records of patients that are stored at the Clinic for Asthma and COPD Management to follow up their disease progress.

"Our hospital has no regulations or procedures for asthma management. We compile general SOPs of the outpatient department. We have a regulation of making outpatient medical records and asking asthma patients to give their empty sprays to health staffs at their medical examination".

Infrastructure of the Clinic for Asthma and COPD Management

Small examination room, insufficiency of intensive diagnostic equipments and some new drugs

Doctors and nurses said that their clinic is quite cramped. In average, the clinic has about 90 patients a day (8 working hours). They do all things including patients' examination, spirometry, and consultation as well. Therefore, the clinic is noisy and this affects a lot to the quality of their examination and consultation activities.

"Our room is small, we do both spirometry and clinical examination here, so it is noisy and crowded".

"I think our facilities are not yet sufficient, we lack some equipment for diagnosis and treatment such as plethysmography, FENO, impulse oscillometry, Eosinophile examination in sputum colonoscopy...".

All medical records are in paper, not electronic one

All patients are monitored by paper-based medical records. When patients come, nurses find their records in the stored cabinet and this takes a long time. In addition, it is difficult to find all information that help to follow patients' disease progress

"We have no electronic system of patient records. We could not to quickly link examination results of patients from other departments in the hospital, we should look at all papers and find how to link them together".

"If the hospital manages medical records by electronic system, I think we will save a lot of time and can have more helps to our patients in term of improving their asthma control".

Human resource

Overload of patients with different health problems makes doctors not focus on asthma patients

The Clinic for Asthma and COPD Management has patients not only asthma or COPD, but also patients with any respiratory troubles from other departments in the

hospital. Also, the clinic gets patients from other hospitals when they need consultation meetings among departments and hospitals. This makes patient overload become more serious; thus, doctors have less time for their asthma patients.

"We get about 90 patients a day, but we also have consultation meetings with other departments and sometimes with other hospitals. Thus, we have not much time for each patients, therefore, the quality of healthcare could be less than expected".

"Crowded patients, both asthma and no asthma (e.g. preoperative consultation with other departments or hospitals…) will affect the examination and treatment of asthma".

Insufficient resources of nurses

Only one nurse works at the clinic each day with 90 patients in average. Nurse at the clinic is responsible for many works, including patient registration, medical record preparation, spirometry test, consultation for patients… This leads them to not have much time for each patient. Moreover, the insufficiency of nurses in the clinic makes them have no time to update their knowledge and participate in continuous training in professional courses.

"Human resource now could not enough to response patients' needs because one nurse has to do many things, patient registration, medical record preparation, spirometry test… we could not do good consultation of medication using for patients".

"The nurse in the clinic has not been trained in asthma management. We know but we don't have enough nurse for daily works, so it is not enough time to update knowledge".

Communication activities

Effectiveness of communication about asthma treatment adherence is limited due to lack of diversity of communication materials.

Health staff at the clinic mentioned that they have used some leaflets provided by the hospital and pharmaceutical companies as communication materials for their patients. In addition, there is a television in front of the clinic that is usually used as a communication channel to provide information on asthma to patients. Health staff also found that these communication methods do not bring effects on knowledge or adherence to medication to their patients because the clinic is so crowded that they could not listen to and focus on.

"We have a television screen in front of the clinic, leaflets made by our hospital or pharmaceutical companies but they are not "attractive" for patients".

"I think they (communication materials) have effectiveness but a little. Because they are still not diverse and not attractive enough for patients to pay attention".

Financial-related difficulties

Doctors have some difficulties as prescription due to administrative regulation of healthcare insurance (HI)

Prescription for patients with HI should be complied with administrative regulation of HI. Doctors complained that regulations of price ceilings are so strict that they often divide prescriptions of patients into some separate ones. Therefore, patients have visited the clinic many times to get their drugs. This is both time-consuming for physicians and difficulties for patients, especially severe or elderly patients, as they have to travel several times.

"In fact, HI will pay a part of health expenditure for patients as they have HI.

Because of the ceiling price of a prescription, we often have to divide prescriptions into some separate ones. And patients have to travel sometimes, which makes it difficult for patients with advanced asthma who need more combination drugs or elderly patients".

Patients without HI face to difficulties for payment of treatment

Patients without HI have to pay all health expenditure. This is a problem for some patients with severe asthma who have to use advanced drugs with expensive prices. This leads them to insufficient treatment adherence.

"Patients with HI do not have financial difficulties, but patients without HI have difficulties because of high drug costs, so they often use drugs intermittently".

Patients' obstacles in managing their asthma

Some patients have insufficient knowledge of treatment adherence

Most patients have good knowledge of the disease and the importance of treatment adherence. But some patients could not understand these issues. It could make their disease out of control and have more risks of uncontrolled asthma.

"Patients are well informed about their disease situation, but some do not understand the importance of using medicine as prescription".

The acceptability of AAP implementation

As mentioned in the Methodology, we applied some implementation strategies for physicians and asthma patients. For physicians, we re-trained them to consult and supervise their patients about AAP. In fact, all the doctors of the Clinic for Asthma and COPD Management have official required certificates for asthma and COPD treatment and management, we needed a one-day training workshop with these doctors to make an agreement on how to implement AAP for patients. For patients, we provided them a leaflet with all key information of AAP and instructed them to follow the plan. We piloted 19 patients and interviewed them by cell phone after 4 weeks.

Both managers and physicians had an agreement of implementing AAP for asthma patients because they are definitely aware of the importance of this plan. Especially, support from managers brought significant advantages to implementation of AAP due to the availability of institutional policies. Moreover, all doctors and nurses have good knowledge and experiences of asthma treatment and management and this also made the implementation become more suitable.

"We of course support this implementation of AAP. We know that AAP will make doctors and patients control asthma better, and will reduce treatment costs".

"Our doctors and nurses have good professional capacity, we want to do AAP to patients but we think we are overloaded so that we do not have time to do it. But we will try…"

Clinicians found it acceptable for using the AAP as consulting for their patients. Clinicians used to think it will take much time and it would be difficult to apply in the practice in the case of their overload. However, they found in fact it did not take much more time as usual while it made them easier and more comfortable in instructing their patients.

"It is easier to guide patients when such a plan with a notorious description, and therefore they are also easier to understand".

"In fact, the counseling will not be taken much longer, but also easily perceived or understood for myself and patients".

In addition, patients love to use the AAP because they understand clearly the contents of the AAP, appreciate the healthcare's consulting provided in the AAP and do not have much difficulties in the implementation.

"The advice and guidance of the doctors on AAP are very adequate and detailed, how to use the drug in a Go Zone, Caution Zone, Danger Zone. The doctor instructs how to use MDI, how to use the relievers and controllers, guides on asthma action plan, what is the green light, the yellow light and the red light. It's really easy to understand, easy to remember and easy to implement".

DISCUSSION

In the case of evaluating patients' medication adherence, our study collected information on 156 asthma patients who were examined at the The Clinic for Asthma and COPD Management of Nhan Dan Gia Dinh Hospital (CAM-NDGD). In which 92.3% of patients are over 40 years old, this is quite consistent with the epidemiological characteristics of asthma disease in Vietnam as well as the increasing in the prevalence of asthma in the community by age according to cross-sectional surveys in 7 provinces representing 7 ecoregions of Tran Thuy Hanh et al in 2010 and the study in An Lao and Hai Phong districts of Nguyen Quang Chinh in 2017 (3, 6). This prevalence actually reflects the cumulative incidence of the disease by age because asthma is a chronic disease. Besides that, in Tran Thuy Hanh's study, the prevalence of asthma was lower in women than in men - 3.62% compared to 4.6%, however in this study, the percentage of female patients was higher than male (78.2% compared to 21.8%) (3). This is also a proportion reflecting the fact that asthma patients visiting the CAM-NDGD are mainly female, and this may be due to the fact that men are less likely to seek health care than women according to World Health Statistics 2019 (7).

Two common tools in assessing the level of asthma control are the symptom assessment of GINA 2018 or the ACT questionnaire. Both methods are based on interviewing patients about respiratory symptoms in the past 4 weeks. The ACT uses 5 questions and calculates points while the level of asthma control of GINA consists of 4 simple questions with "yes" or "no" answers. As provided in the overview, Le Van Nhi' study has shown the similar assessment results between the evaluation according to the ACT multiple choice questionnaire and the guideline of GINA 2006(8). Similarly, studies by Thomas M. et al. in 2009, Vinh Nhu Nguyen, Niels Chavannes, Lan Thi Tuyet Le and David Price in 2012 also showed resemblance in assessing the level of asthma control of these two public tools (9, 10).

However, after 2006 onwards, the GINA's guideline for asthma control assessment changed, including the PEF parameter was removed, so this assessment was convenient for doctors and patients and easier to perform, especially in those where there were no spirometry (5). In addition, the GINA's guideline currently has only 4 questions with yes/no answers that should be clinically easier and is being applied in the CAM-NDGD and some other hospitals in HCM city to assess the level of asthma control. Therefore, our study has used this evaluation tool.

Our study results showed that 59 percent of patients had good control of asthma symptoms in the past 4 weeks before our research deployed.

This rate was also quite similar to the studies of Vinh Nhu Nguyen, Niels Chavannes, Lan Thi Tuyet Le and David Price in patients visiting the University of Medicine and Pharmacy in Ho Chi Minh City in 2011 was 55.1%(10). The ratio of good asthma control in our research was higher than that of Tran Thuy Hanh and colleagues in 2010 was 39.7% (3). It could be seen that our study and Vinh Nhu Nguyen, Niels Chavannes, Lan Thi Tuyet Le and David Price were implemented at one of the highest quality hospitals in Ho Chi Minh City, study of Tran Thuy Hanh is in the community, so there are many different characteristics of knowledge, health care practices and seeking medical services ... in patient samples of these studies and they were the reason for the difference in asthma control rates.

A systematic review of Powell H and Gibson PG published in Cochrane Database of Systematic Reviews in 2009 showed that patients' self-management of asthma would get the best results with the assistance of a specific asthma action plan or regular re-examination (11). Similarly, an overview of Hilary Pinnock et al. in 2017 self-management of asthma (which had 3 important components including patient education, providing asthma action plan and regular clinical assessment) could reduce the number of admission and emergency counseling, improve clinical and quality of life for asthma patients in many cultures, population characteristics, and other health care systems (12).

Our research has shown the support of the hospital leaders, health care staff and patients in developing an asthma action plan. However, the fact that most patients did not have PEF measurement at home so although we follow GINA's asthma action plan, the PEF parameter in the plan is not mandatory. This was also mentioned by Arjun Prakash Tambe et al. In an assessment of the applicability and acceptance of the asthma action plan in 2019 (13). The author pointed out that the asthma action plan is not used systematically by healthcare providers, redesigned asthma action plan that was practical to improve patient assessment and use of the plan, resulting in improved asthma control results for patients.

It was diverse in application of asthma action plan in many different conditions. The two common reported uses are written asthma action plan or mobile-based or app-based asthma action plan (13). Some studies, such as Allison J. Burbank et al. in 2015 in developed countries like the US, have suggested that a mobile-based asthma action plan is feasible and appropriate to implement for the target group adolescent asthma (14).

In the Vietnamese context, particularly at the NDGD hospital, we used the asthma action plan printed on paper with color and easy-to-follow instructions. Although the PEF parameter is shown in the plan, as discussed above, these parameters are noted for patients as optional. The study's results also showed that all patients were very satisfied and appreciated this activity because the plan was easy to understand, remember and implement. The medical staff (Doctors and Nurses) of the CAM-NDGD also assessed the implementation being appropriate because of the many benefits in controlling asthma for patients. However, the biggest difficulty mentioned was that healthcare providers needed more time to guide, advise and evaluate patients while overloaded due to crowded patients, lack of nurses and cramped facilities were the problem of the clinic. These were also the difficulties that the implementation of asthma self-management activities faced.

CONCLUSIONS

The study's results showed the importance of deployment of AAP for asthma patients in Vietnam hospitals. It is essential to add more staffs for the asthma and COPD management units, especially trained nurses. Particularly for NDGD Hospital, the respiratory examination room should be separated from the ACM-NDGD and the electronic medical health record management should be implemented soon.

Further research is needed on the factors that influence (both positive and negative) on the patient's asthma management including (1) the cooperation between the patient and the health care provider; (2) drug problems; (3) health education about asthma and management; (4) patient health beliefs; (5) applying self-regulation interventions; (6) comorbidities (7) emotional disorders and anxiety; (8) social support; (9) non-pharmacological methods; (10) accessing to health care services; (11) and professional factors; It also mentions the problem that medical staff need more time to consult and guide patients.

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