

# Asthma Action Plans Knowledge for Thailand's Health Care Professionals

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**Background:** Asthma is the most common chronic diseases and its patients suffer from a high level of morbidity. Health care professionals play a crucial role in effective treatment because, most patients obtain their knowledge of the disease from their physicians and hospital clinicians.

**Objective:** To determine the level of asthma knowledge in health care professionals with respect to asthma symptoms, activity limitations, environment triggers, and educating patients.

**Material and Method:** The attached questionnaire has been modified and administered to a group of health care workers in Thammasat Hospital. It is statistically valid and reliable and has proven to be an indispensable tool for staff. It has been completed by 365 health care professionals including nurses, physicians, and pharmacists in primary and secondary hospitals from different parts of Thailand. Descriptive statistics were used to calculate overall scores. The total sum score was calculated and analyzed using SPSS.

**Results:** A total of 295 questionnaires were returned which provided a response rate is 80.8%. About 86.8% of the respondents were female aged between 20 to 30 years. The majority of participants was nurses and had less than 10 years of experience in asthma clinics. About half of respondents were already using an asthma action plan. More than half of respondents claimed to understand the disease including activity limitations, asthma symptoms, and environment factors correctly. Some 44.1% of physician respondents, 15.1% of nurse respondents, and 75% of pharmacist respondents could not answer some of asthma action plan knowledge questions correctly leading to the conclusion that asthma action plan knowledge is lacking throughout the health profession especially in regard to steroid medication.

**Conclusion:** The survey showed that health care professionals in primary and secondary care hospitals in Thailand, especially, lack asthma knowledge that is crucial for them to explain to self-care managed asthma patients. The survey also suggests that improvement in asthma awareness and treatment can be made by educating this group of health care professionals primarily because they have access to asthma patients on the clinical level. Ultimately, it is the patients who need to follow the guidelines in order to support long term disease management.

**Keywords:** Asthma, Health care professionals, Knowledge, Long-term management

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Asthma is the most common chronic disease in adults and children, and sufferers experience a high level of morbidity. It affects the patients' daily life and impacts on primary care workload<sup>(1,2)</sup>. Asthma is not only co-morbidity but it is crucial disease. The evidence from the World Health Organization (WHO) show that the mortality rate in Thailand was 7.88 according to the asthma control survey, the asthma burden is high in Thailand because of the high rate of resulting

hospitalizations numbering about 15% and 22% of them visit the emergency room<sup>(3)</sup>. It is significant that the cost of hospitalization will inform the management decisions in controlling and curing the disease<sup>(3)</sup>. A systematic review showed that a self-management education program can improve in health outcomes<sup>(1)</sup> by promoting patient self-management plans as the international guidelines on managing asthma<sup>(1)</sup>. Moreover, patient education is also important in the successful control of asthma in term of self-management<sup>(4)</sup>. Health care professionals play an important role in asthma clinics due to their direct involvement with asthma patients. Hence, health care professionals including physicians must play a key

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role in promoting and using standardized guidelines. In addition, effective asthma care needs to include the patient in the decision making process which called patient centered care<sup>(1)</sup> finally, while the asthma action plan guideline is a communication tool to be used by doctors and their patients, it still needs the collaboration between other health care professionals who have proper and accurate knowledge of both the disease and the active patient.

Asthma Action Plan provides self-management instructions including: the tracking of asthma symptom frequency, emergency visits, and asthma quality of life from baseline to the 12-month follow-up<sup>(5)</sup>. The guideline objectives' are:<sup>(1)</sup> to confirm the diagnosis of asthma before long-term therapy is started;<sup>(2)</sup> carry out a trail of other available treatments and;<sup>(3)</sup> to provide self-management education, focusing on patient's needs<sup>(6)</sup>. Patients who use an asthma action plan know when the symptoms start, what the symptoms look like, how to avoid additional risk factors, and how to proceed when the symptoms start. It is obvious that the lack of an asthma action plan can lead to high asthma morbidity<sup>(7)</sup>. The patient without using an asthma action plan might not be able to manage their symptoms properly and promptly. Thus, an asthma action plan is the alternative tool in asthma management that lowers the number of severe complications such as respiratory failure.

Therefore, we hypothesized that a higher level of knowledge by health care professionals, specifically, with regard to asthma action plans could lead to a greater responsiveness in well-controlled asthma patients. Because health care professionals; physicians, nurses and pharmacists play a major role in delivering disease education to patients, their knowledge will directly affect asthma management. To the best of our knowledge, however, no empirical study has been conducted to assess the level of asthma action plan knowledge in health care professionals in Thailand, particularly, through the use of a questionnaire designed to obtain basic asthma management knowledge. This study aims to fill this gap by assessing Thailand based health care professionals' knowledge of asthma action plans in order to respond to patients' health needs.

## **Material and Method**

### **Study population**

This observational study utilizes a cross-sectional survey research design. The population of our study includes approximately 365 health care

professionals including doctors, nurses, and pharmacists who are involved in caring for asthma patients and have had the opportunity to deal with asthma exacerbations in a total of 30 hospitals from many parts of Thailand. Our questionnaires were sent to primary and secondary care hospitals and the size of the sample ranked by the number of beds; 200 to 500 beds, 90 to 150 beds, 60 beds and 10 to 30 beds. There are 3 hospitals with 200 to 500 beds which are Nan Hospital, Takua-pa Hospital, and Su-ngaikolok Hospital. Poh Kaew Hospitals, Aranyaprathet Hospital, Kalasin Somdej Phrayupparat Hospital, Yangtalad Hospital, Kanchanapadi Hospital, and Lang Suan Hospital are 90 to 150 bed facilities. Potaley Hospital, Loei Somdej Phrayupparat Hospital, Yangtalad Hospital, Nampong Hospital, Tasongyang Hospital, Patiew Hospital, and Phitsanulok Somdej, and Phrayupparat Hospital are 60 bed facilities. Finally, Sarapee Hospital, Chiangrai Somdej Phrayupparat Hospital, Tawangpha Hospital, Nanoi Hospital, Tachang Hospital, Bang Phra Khun Hospital, Ta ta Keb Hospital, Ban Pho Hospital, Bangkra Hospital, Muang Sam Sip Hospital, Erawan Hospital, Nawong Chalerm Phra Ked Hospital, Ongpang Hospital, Pak Nam Lang Suan Hospital, and Noenmaprang Hospital are 10 to 30 bed facilities. Results from all of these facilities are included. The final results show 295 (80.8%) completed questionnaires were returned to us. Because of their expertise in medical care and their working profiles, we believe their assessments of institutional knowledge with regard to asthma action plans should be valid and reliable. Moreover, since they are the trainers of asthma management practices to all patients throughout the country, their knowledge is crucial to the direction of future developments in self-management by asthma patients.

### **Inclusion criteria**

- 1) Health care professionals in primary/secondary care hospital who have been have had a chance to look after the asthma patients recently.
- 2) The number of asthma patients is at least 5 persons per years.

### **Survey approach**

Our questionnaire was based on the standard assessment tool modified by Waltz, Strickland, and Lenz (1991)<sup>(8)</sup> and is comprised of a total of 23 closed questions. It covered mainly the following items; (1) demographic information about the respondents and their practice settings; (2) Asthma Knowledge (Allergen

Avoidance, Medication, and Disease); (3) Asthma action plan knowledge. Please see appendix for the questionnaire format.

### Data analysis

For each question, there will be a correct answer and the number of correct responses calculated as a percentage. Descriptive statistics were used to calculate overall scores. The total sum score was calculated and analyzed to the average mean score by using SPSS (Statistical Package for the Social Sciences Software) version 12 for Windows.

### Results

A total 295 responses reflected a response rate of about 80.8% (295/365). We present the results in the following part.

#### Participants characteristics

The demographic data of the responding health care professionals is shown (Table 1). Most of the participants were female and their ages were between 20 to 30 years. The majority of participants were nurses and most of the respondents had less than 10 years of work experience in an asthma clinic. About half of the respondents were using an asthma action plan. 65% of the respondents were using Asthma Action Plans that included paper documents, video and smart phone application.

#### Asthma knowledge

The asthma knowledge section of the survey consisted of one question for activity limitation, seven questions for symptoms, and six questions for environment factors. The results are separated into three groups by the respondents' health care career paths which are physicians, nurses, and pharmacists.

Fig. 1 shows the result regarding allergen avoidance. Most of the health care professionals who participated provided the correct answer and received a high level score (more than 50%). Except for certain questions such as, "Covering the pillow and mattresses by plastic cover to prevent asthma exacerbation", the results from all groups are lower than half of the respondents' number from each group which is 32.3% for physicians, 25.2% for nurses, and 40% for pharmacists respectively.

Fig. 2 displays health care professionals' approaches to asthma medication. As the results show health care professionals know how to use bronchodilator and asthma controllers, and when to

**Table 1.** General characteristics of the participated health care professionals

Characteristics	Abundance (%)
Sex	
Female	257 (86.8)
Male	39 (13.2)
Age (years)	
20 to 30	105 (42.3)
31 to 40	81 (32.7)
41 to 50	48 (19.4)
51 to 60	14 (5.6)
Over 61	0
University certificate	
Lower	14 (4.7)
Bachelor's degree	256 (87.1)
Higher	24 (8.2)
Status	
Physicians	34 (11.5)
Nurses	218 (73.6)
Pharmacists	20 (6.8)
Duration of work (years)	
Less than 10	150 (50.5)
10 to 20	89 (30.0)
Over 20	58 (19.5)
Asthma clinic	
Yes	265 (88.3)
No	35 (11.7)
Asthma action plan using	
Yes	195 (65.4)
No	103 (34.6)
Type of Asthma action Plan that they use	
Paper	103 (45.6)
Video	3 (1.3)
Smart phone application	1 (0.4)
Oral explanation	106 (46.9)
Etc.	13 (5.8)

stop medication. Moreover, the result show that the doctors get very high (100%) scores regarding appropriate medication especially in knowing that the "Asthma patient should use bronchodilator (Ventolin/Berodual®) everyday". However, the nurses get only 65.6% with regard to the same question.

The disease part of asthma knowledge is shown in Fig. 3. It shows the most common correct response from physicians is high compared to other healthcare professional groups. "Wheezing is an onset of asthma exacerbation" is one of the examples that health care professionals know well. The results are 100% from physicians, 97.3% from nurses and 95% from pharmacists respectively.

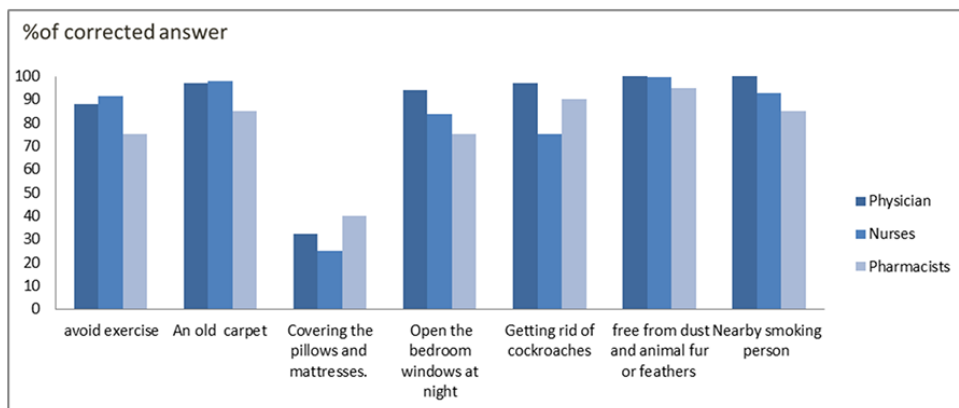


Fig. 1 Result regarding allergen avoidance.

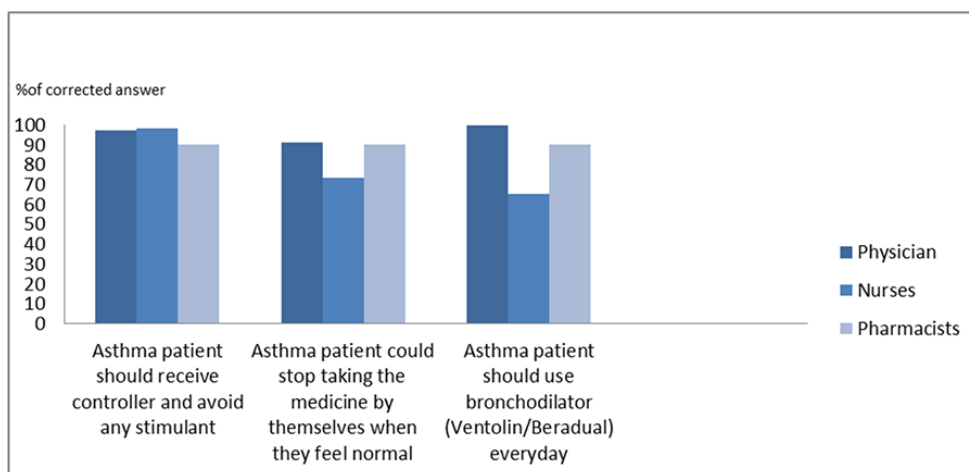


Fig. 2 Displays health care professionals' approaches to asthma medication.

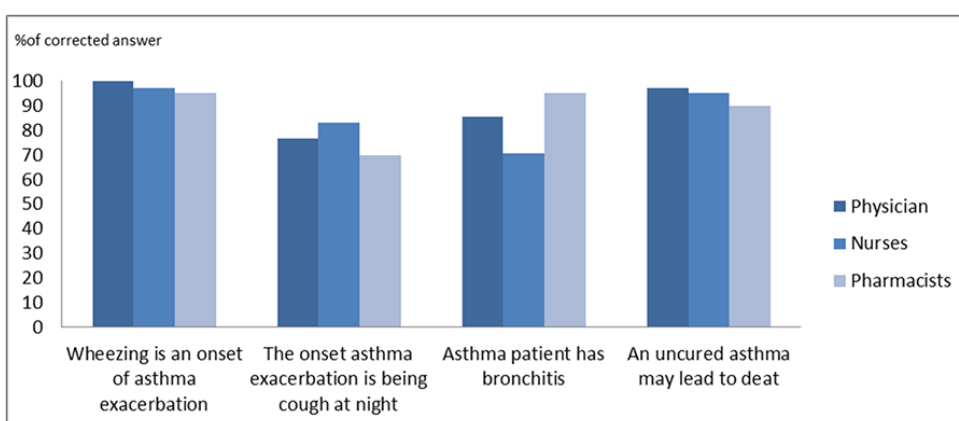
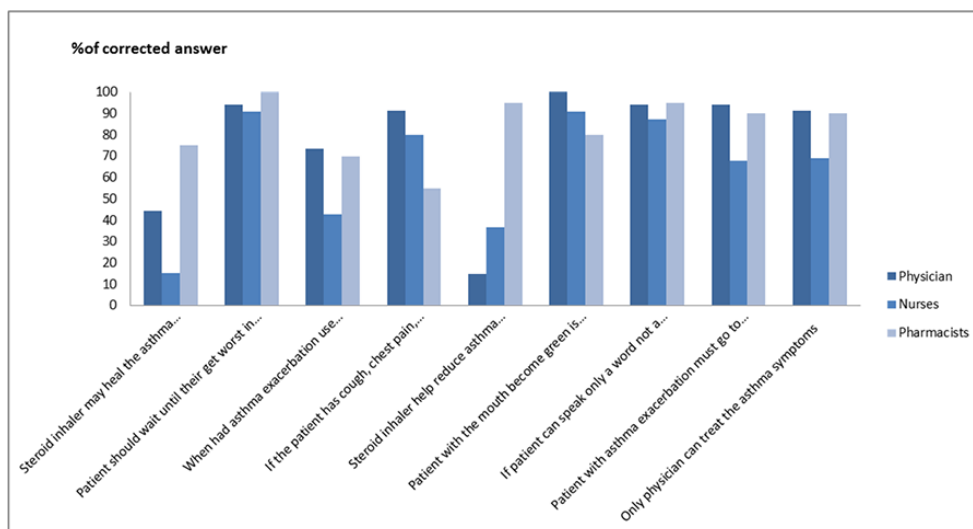


Fig. 3 The disease part of asthma knowledge is shown

**Knowledge of Asthma action plan**

In Fig. 4, shows the percentage of correct

answers to seven asthma action plan questions answered by the surveyed healthcare professionals.



**Fig. 4** Knowledge of Asthma action plan

The correct percentages from physician and pharmacists are mostly in the high level or more than 50%. However, some questions are quite low which less than 50% such as a “Steroid inhaler may heal the asthma exacerbation”, or “When had asthma exacerbation use bronchodilator (Ventolin/Berodual®) for 1 dose then abruptly come to the hospital”, and “Steroid inhaler help reduce asthma exacerbation in 20 mins”.

### Discussion

To the best of our knowledge, this is the first study regarding asthma knowledge among the health care professionals in Thailand and may serve as a future basic recommendation in Asthma care development. Our study has various target groups among the group of nurses, doctors, and pharmacists in the primary and secondary hospitals from different parts of Thailand.

To determine the asthma knowledge among the health care professionals who participated in this survey, more than half of them are using asthma action plans and have great experience in asthma treatment from a clinical perspective. The patients reported that they mostly obtain their education from doctors and hospital clinics in 69% and 49% respectively<sup>(9)</sup>. According to the high number of nurses in the primary and secondary care hospitals, there may be the nurses with more or less experience caring for asthma patients. The main survey respondents are nurses due to the distribution number of nurses versus physicians. The fact that nurses play a major role in educating patients about asthma is not surprising nor is their demonstrated

skills in treating asthma patients<sup>(9)</sup>. Our results indicate that the level of asthma knowledge in health care professionals is at a high level. As a result of asthma education they understand general clinical practices regarding asthma, the onset of symptoms, and how to avoid the risk complicating factors, thus, leading to improvements in health outcomes in asthma patients<sup>(9)</sup>.

Certain survey questions we believe could, in general, result in improved health outcomes in asthma patients. However, the questionnaire was self-administrated and a certain level of inaccuracy may be inherent due to the misunderstanding and the misinterpreting of the question being asked. Moreover, we assume that the shortage of specialists in the primary and secondary hospitals could lead to the lack of staffing resources in asthma clinics throughout the country. Nevertheless, specialists such as pharmacists, who play such a critical role in asthma treatment, the study found a higher number of correct answers, particularly with regard to steroid medication.

Self-management is a sustainable way in the long term management for asthma patients who have been educated in this topic. It is crucial that effective asthma self-management intervention should be in the form of a written action plan including medications, recognizing deterioration, and appropriate actions to take<sup>(10)</sup>. Further study should be focused on the knowledge of asthma action plans because asthma patients have to live with long-term condition and ultimately need self-management. The strength of this project is that it is surveyed health care professionals who will be able to contribute to the care of asthma

patients, and will be the key group who will be caring for asthma patients. Health care professionals involved in caring for asthma patients will also be the key to teaching others about the implementation of any asthma action plan. Any misunderstanding by this group regarding the content in guidelines may result in poor health outcomes in asthma patients.

### **Implication**

We expect this empirical study to be one of the first to assess the level of health professionals regarding their knowledge of asthma action plans. We also expect this study will allow for a comparison between our findings and those of other studies in other countries. It is also expected that healthcare professionals will gain more insight on the importance of patient self-management, which is currently one of the templates for the whole country. Moreover, understanding levels of the knowledge of asthma action plans and general asthma knowledge in health care professionals are crucial for long-term disease management and would be crucial on a whole systems approach process level.

### **Study limitations**

First, like other self-reported data; respondents may have reported what they believed to be acceptable, instead of their actual practice. Second, we cannot access all hospitals due to the limit of time and funds and the last most of the respondents are nurses thereby injecting a professional bias that may or may not be relevant. We believe the experts who completed the questionnaire understand the questions perfectly and have sufficient knowledge regarding asthma care.

### **Conclusion**

This study assessed the level of knowledge of asthma action plans in health care professionals in primary and secondary care hospital in Thailand and found that some of them still lack asthma action plan knowledge. Further improvement is needed throughout the system, but we started with this group because of their direct clinical access to asthma patients who need to follow the guidelines to support long term health management.

### **Acknowledgements**

This study was supported by Faculty of Medicine, Thammasat University. We would like to thank all participants for all support and response to questionnaires.

### **What is already known on this topic?**

Asthma is the most common chronic diseases and its patients suffer from a high level of morbidity. Health care professionals play a crucial role in effective treatment because; most patients obtain their knowledge of the disease from their physicians and hospital clinicians.

### **What this study adds?**

We contribute great self-management which can be advantage to asthma patients by surveying on the health care professionals. It is important to level of knowledge of asthma in order to improve self-care and serve as a recommendation.

### **Potential conflicts of interests**

None.

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## Appendix

### Asthma Action Plan Knowledge questionnaire

#### Questionnaire explanation

- To inform researcher the overall operation results, and improve the effectiveness of project in advancement.
- Please ✓ in the box and completely fill out the information.

Had you have a chance to look after the asthma patents recently?

Yes  No

The number of asthma patient you are in charge of?

Less than 5  5-10  more than 10

#### Part 1 General Information

- Gender  Male  Female
- Occupation  
 Pharmacist  Nurse  
 Physician  Other (Please, be specific).....
- Workplace: Department.....Hospital.....
- Educational degree  Lower?  Bachelor's degree  Higher
- Age  20-30 years  31-40 years  
 41-50 years  51-60 years  over 61
- Period of work time  less than 10 year  10-20 years  over 21
- Does your hospital have an Asthma Clinic?  Yes  No  Do not know
- Do you use Asthma Action Planwith your asthma patients?  
 yes (If yes, please continue question number 9 )  No
- Types of Asthma Action Plan that you use  
 Paper  VDO  
 Smart phone application  Oral explanation  Other (be specific).....

#### Part 2: General knowledge of written Asthma Action Plan

- Asthma patient should avoid exercise.  Yes  No
- An old inappropriate condition carpet may trigger asthma exacerbation  Yes  No
- Covering the pillows and mattresses by plastic cover to prevent asthma exacerbation  Yes  No
- Open the bedroom windows at night help prevent asthma exacerbation  Yes  No
- Getting rid of cockroaches from the house may prevent asthma exacerbation  Yes  No
- The bedroom should be free from dust and animal fur or feathers  Yes  No
- Nearby smoking person did not worsen the asthma exacerbation  Yes  No
- Wheezing is an onset of asthma exacerbation  Yes  No
- The onset of asthma exacerbation is being cough at night  Yes  No
- Asthma patient has bronchitis(inflammation of bronchus)  Yes  No
- Asthma patient should receive controller and avoid any stimulant  Yes  No
- Asthma patient could stop taking the medicine by themselves when they feel normal  Yes  No
- Asthma patient should use bronchodilator (Ventolin/berodual) everyday  Yes  No
- An uncured asthma may lead to death  Yes  No
- How do you advice your patient when their have symptoms?  
 15. Steroid inhaler may heal the asthma exacerbation  Yes  No
16. Patient should wait until their get worst in order to use bronchodilator (Ventolin/berodual)  Yes  No
17. When had an asthma exacerbation use bronchodilator (Ventolin/berodual) for 1 dose then abruptly come to the hospital  Yes  No
18. If the patient has cough, chest pain, wheezing sound, use bronchodilator every 15 min for 3 dose  Yes  No
19. Steroid inhaler help reduce asthma exacerbation in 20 min  Yes  No
20. Patient with the mouth become green is classified as severe case  Yes  No
21. If patient can speak only a word not a complete sentence, they can use bronchodilator and follow up at home  Yes  No
22. Patient with asthma exacerbation must go to the hospital no matter how much the symptoms were  Yes  No
23. Only physician can treat the asthma exacerbation  Yes  No



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## ทดสอบความรู้เรื่องแผนปฏิบัติตัวเมื่อมีอาการหืดกำเริบในบุคลากรทางการแพทย์

ธมนวรรณ ไสระเวช, จุติมา ธีรบุญนิธิวัฒนา, พัชรา บุญบุญอนุชิต, กัทริน ภิรมย์พานิช, อรพรรณ โพชนุกูล

**ภูมิหลัง:** โรคหืดเป็นโรคเรื้อรังในผู้ใหญ่และเด็กที่พบบ่อยและสำคัญ เนื่องจากสามารถมีผลก่อให้เกิดอาการทางระบบทางเดินหายใจ ส่งผลต่อการดำเนินชีวิตประจำวัน เมื่อมีอาการหืดกำเริบจำเป็นต้องได้รับการรักษาอย่างเร่งด่วน มิฉะนั้นอาจส่งผลต่อชีวิต

**วัตถุประสงค์:** เพื่อศึกษาระดับความรู้เกี่ยวกับแผนปฏิบัติตัวเมื่อมีอาการหืดกำเริบ (Asthma action plan) ในบุคลากรทางการแพทย์

**วัสดุและวิธีการ:** เป็นงานวิจัยเชิงพรรณนาแบบตัดขวางใช้เวลาดำเนินการวิจัย 3 เดือน ชุดคำถามประกอบด้วยส่วนที่ 1 ข้อมูลทั่วไปจำนวน 9 ข้อ และส่วนที่ 2 ความรู้ทั่วไปเกี่ยวกับแผนปฏิบัติตัวที่เป็นลายลักษณ์อักษร (Asthma action plan) จำนวน 23 ข้อ โดยมีองค์ประกอบ 2 ด้าน คือ ด้านชีวิตจำกัดกิจกรรม (Activity) 1 ข้อ เช่น การออกกำลังกาย ด้านอาการ (Symptom) 7 ข้อ เช่น อาการไอ หายใจเสียงวี๊ด การอักเสบของหลอดลม ด้านปัจจัยสิ่งแวดล้อมภายนอก (Environment) 6 ข้อ เช่น แมลง ไรฝุ่น ควันบุหรี่ ด้านการให้คำแนะนำผู้ป่วยโรคหืด (Advice) 9 ข้อ เช่น การใช้ยาพ่น ระดับของอาการ โดยข้อมูลที่รวบรวมมาจากแบบสอบถาม นำมาวิเคราะห์เป็นร้อยละ (Percentage) และค่าเฉลี่ย (Mean)

**ผลการศึกษา:** มีผู้เข้าร่วม 295 คน คิดเป็นร้อยละ 80.8 โดย 86.8% ของผู้ตอบแบบสอบถามเป็นเพศหญิง และส่วนใหญ่อยู่ในช่วงอายุ 20 ถึง 30 ปี และมีประสบการณ์การทำงานเกี่ยวกับผู้ป่วยโรคหอบหืดน้อยกว่า 10 ปี ผลการศึกษาส่วนใหญ่มีความรู้ความเข้าใจเกี่ยวกับโรคหืด ทั้งในด้านชีวิตจำกัดกิจกรรม ด้านอาการ ด้านปัจจัยสิ่งแวดล้อมภายนอกในระดับดี แต่มียังขาดความรู้ในด้านแผนปฏิบัติตัวและการให้คำแนะนำผู้ป่วย คิดเป็น 44.1% ในแพทย์ 15.1% ในพยาบาล และ 75% ในเภสัชกรโดยเฉพาะในเรื่องการใช้ยาสเตียรอยด์

**สรุป:** ผลการประเมินระดับความรู้เกี่ยวกับแผนปฏิบัติตัวเมื่อมีอาการหืดกำเริบ (Asthma action plan) สามารถนำมาใช้ประโยชน์ในการพัฒนาระดับความรู้ความเข้าใจเบื้องต้นเกี่ยวกับแผนปฏิบัติตัว เมื่อมีอาการหอบหืดกำเริบ (Asthma action plan) ในบุคลากรทางการแพทย์เพื่อประโยชน์ในการรักษาผู้ป่วยโรคหอบหืดในระยะยาว

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