



## **Role of clinical pharmacist in counseling asthma patients**

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**DOI: <https://doi.org/10.33545/26647591.2020.v2.i1a.13>**

### **Abstract**

Patient counseling is an interpersonal communication between the pharmacists and the patient/patient party regarding the disease, medications and lifestyle modifications. Asthma is a chronic disease affecting the respiratory system. It affects a significant number of people worldwide, leading to high morbidity and mortality. Asthma is a chronic disease requiring lifelong treatment and involves the use of specialized devices. It also requires self-monitoring of treatment by the patient. A pharmacist can play an active role in asthma management by counseling the patients. Counseling the asthma patients is known to increase the patient's knowledge regarding the disease, medications and lifestyle modifications, thus improving patient adherence to the treatment and leading to better therapeutic outcomes and quality of life. While counseling the patients, the pharmacists should focus on the disease, medications, specialized inhaler devices as well as lifestyle modifications such as avoiding cigarette smoking, avoidance of allergens, etc. Pharmacists should provide special counseling to special population groups like pregnant patients, children and elderly patients. A pharmacist can adopt several strategies such as the use of placebo inhalers, audiovisual aids and distribution of patient information leaflets to improve the quality of counseling. There are several studies worldwide showing positive results with pharmacist-provided counseling in asthma. In developing countries, the concept of patient counseling is at the infancy stage and data regarding pharmacist-provided counseling in asthma are scarce.

**Keywords:** clinical pharmacist, asthma, patient counseling

### **Introduction**

Patient counseling deals with providing information to the patients regarding their medications in simple layman's language. It may be defined as providing medication information orally or in written form to the patients or to their representative<sup>[1]</sup>. The outcomes of effective patient counseling are as follows: The patients recognize the importance of medication for their wellbeing; encouragement to patients to establish a working relationship with the pharmacist and foundation for continual interaction with, and consultation from, the pharmacist; improvement in the coping strategies of patients to deal with medications side effects and drug interactions; the patients are motivated to take their medication for improvement of their health status; development of the ability in patients to make appropriate medication-related decisions concerning adherence to their medication; and the patients become informed, efficient and active participants in disease treatment and health care management<sup>[2]</sup>. Asthma is a common and chronic condition characterized by reversible airway obstruction, airway inflammation and increased airway responsiveness to a variety of stimuli<sup>[3]</sup>. Increasing the knowledge of patients about their asthma therapy is a necessary component of asthma management. Patient counseling should lead to increased patient confidence in the ability to manage asthma on their own, decrease hospital admission rate and emergency visits, increase adherence to treatment and improve the quality of life

<sup>[4]</sup>. In this article, the authors highlight the important role of pharmacists in counseling asthma patients, with relevance to developing countries.

### **Need for clinical pharmacist-provided counseling in asthmatic patients**

**1. Asthma is a chronic disease requiring lifelong treatment:** Asthma requires lifelong treatment. If the patient's symptoms are well controlled, the patient may not adhere to the doctor's advice and may not take medicines regularly. In this condition, the pharmacist can explain to the patient the importance of continuing the therapy.<sup>[5]</sup>

**2. Asthma involves the use of specialized devices:** Due to advancement of technology, there are many devices available that can deliver asthma medication at the required site in minute quantities. However, many times, the patient may not understand the use of these devices. Incorrect use of inhalation devices is also known to be one of the causes of therapeutic failure. This is commonly seen in patients with poor socioeconomic status and in illiterate patients. In these cases, there is a need for counseling the patients regarding the use of these devices.

**3. Self-monitoring of treatment is essential in asthma:** Similar to any chronic disease, the success of asthma management depends on how much the patient, on his/her own, is able to take care of his/her own health. The patient should know the indications for the use of short-acting

bronchodilators during an attack, strategies to prevent the occurrence of an attack, etc. [6, 7].

### Expected outcomes of counseling asthma patients

The outcomes of counseling asthma patients are multidimensional. First of all, the patient understands clearly his/her disease, medicines and lifestyle modifications. Many times, the patients have poor knowledge regarding their disease and medications. This may be acceptable in acute conditions. But in conditions like asthma, which require lifelong treatment and monitoring, the patient should be clear about these things. Some of the other outcomes are that the counseling definitely improves the patients. It is also known to improve patient adherence. [8].

### Topics to be counseled

For better understanding of the topic, the various topics to be counseled for an asthma patient are classified into four. These include counseling regarding disease, counseling regarding medication, counseling on inhalation techniques and counseling regarding lifestyle modifications.

#### 1. Counseling regarding disease

The patients should be told that the disease will not spread to their neighbors and will not affect the children. It will also not spread through eating in the same plates, using the same utensils, etc. If medications are taken properly, the progression of the disease can be prevented and hence the outcomes may be better and they will be symptom free.

#### 2. Counseling regarding medication [9-11]

The counseling regarding medication depends upon the type of medications. Some of the essential points to be counseled are discussed below.

1. Beta 2 agonists (salbutamol, salmeterol and bambuterol): These drugs are available as metered-dose inhalers (MDIs), dry powder inhalers (DPIs) oral liquids and tablets. The patients should be advised not to take salbutamol if they had an allergic reaction to it and should call their doctors if they notice any allergic reaction, tightness of chest, breathing problems, irregular heart beat, seizure and tremor. Patients should be advised to take the missed dose as soon as possible. If a patient remembers the missed dose when it is almost time for the next dose, he/she should take the next dose and skip the missed dose.
2. Xanthine alkaloids (Theophylline): It is available as tablets or injections. The patients should not change the dose without doctor's advice and should inform their doctor if they have any cardiac or lung problems. The tablets which are to be swallowed whole should not be chewed and crushed. The patient should call their doctor if they develop nausea, vomiting, sleeping disturbances, seizure or uneven heartbeats.
3. Anticholinergics (Ipratropium bromide): This drug is available as an MDI. The patients should be advised not to use the medicine if they have had an allergic reaction to this drug or to atropine, peanuts or soyabean. It is not beneficial during an asthma attack. The patient may develop anticholinergic side effects like dryness of mouth and reduced secretions. The patient should be advised to inform the doctor if he/she has blurred vision, dry mouth,

dry throat, cough and nervousness.

4. Corticosteroids (prednisolone, budesonide, fluticasone, beclomethasone): These drugs are available as MDIs, DPIs or as an oral form (Prednisolone). The patient should be advised not to take any of these if he/she has had an allergic reaction to it. Patients should not use more medicine than instructed and should be advised to rinse their mouth with water after inhalation. The patient should inform the doctor if she is pregnant and about any type of infection, especially of the lung. The patient should inform the doctor if he/she develops allergy, tightness of chest, headache, dizziness, nausea or vomiting. Upon long-term use, they may cause elevation in blood glucose (mainly with oral therapy), and hence the patient should be advised regular follow-ups.
5. Mast cell stabilizers (sodium cromoglycate): It is available as an MDI. The patient should not use it if he/she has had allergic reaction to it. This medicine should not be used during an acute asthma attack. The patient should inform the doctor if he/she is taking other medicines, i.e., herbal, over-the-counter medicines, etc. The patient should inform the doctor if he/she has heart, kidney or liver disease. The patient should call the doctor if his/her symptoms are worsening.
6. Leukotriene-receptor antagonists and leukotrient-synthesis inhibitors: The main drugs of this class are Montelukast and Zileuton. The patient should not use these medicines if he/she has had an allergic reaction to these drugs. The patients should not take more medicine than what their doctor has advised. If the patient misses a dose or forgets to take his/her medicine, he/she should take it as soon as possible. If it is almost time for the next dose, he/she should skip the missed dose. These medicines will not stop a severe asthma attack after it has started. The doctor may give him/her a medicine to inhale that will work quickly for a severe attack. The doctor should be called right away if asthma is getting worse or any serious side effects are experienced.
7. Anti-Ig E therapy (omalizumab): The patient should not use this medicine if he/she has had an allergic reaction to omalizumab or hamster protein. As it is an injection, a nurse or some other trained health professional will give this medicine. This medicine needs to be given on a fixed schedule. Patients should ensure that they keep all appointments. This medicine will not stop an asthma attack that has already started. The doctor may prescribe another medicine for the patient to use in case of an acute asthma attack. If the other medicine does not work as well, the patient should inform his/her doctor right away. The doctor should be called right away if the patient notices any allergic reaction, fever, sore throat or cough. Some of the key points to be taken into consideration while counseling about some commonly used drugs.

#### 3. Counseling on inhalation techniques [12, 13]

Asthma is a disease of the respiratory tract, where the patient will be benefited by the inhaled medication. So the choice of suitable inhalation device is crucial in the management of asthma. Counseling regarding the proper use of inhalation device is discussed below.

1. Metered-dose inhaler (MDI): The MDIs offer many advantages over the conventional methods of administering drugs in asthma. The major advantage of inhalation therapy is the direct delivery of medications in much smaller effective doses compared to systemic routes, thus reducing side effects <sup>[12]</sup>. There are several guidelines that explain the correct use of inhalers. The National Asthma Education and Prevention Program (NAEPP) criteria mention that the following ten points should be followed by the patients while using an inhaler:
  - a. Shake vigorously
  - b. Remove cap
  - c. Hold upright
  - d. Breathe out gently, not fully
  - e. Start breathing in slowly and deeply
  - f. Actuate during inspiration
  - g. Continue slow inhalation
  - h. No aerosol loss is visible
  - i. Hold breath for 10 s
  - j. The next dose after 1 min

Steps 5-8 are vital where hand-lung coordination is required. It is found that most of the patients do not use MDIs correctly. After proper technique, only 10% of the drug reaches the airway, with 80% deposition in oropharynx. The pharmacist before dispensing an inhaler should thoroughly explain its use.

2. Metered-dose inhaler with spacer: Use of spacer with metered-dose inhaler allows greater evaporation of the propellant, reducing particle size and velocity, which reduces the oropharynx deposition and potentially increases lung deposition. Spacers overcome the problem of hand-lung coordination encountered while using MDI alone. It is beneficial in elderly patients and few patients (with rheumatoid arthritis, parkinsonism, etc.) who cannot coordinate the actuation and inhaling procedure of the inhaler properly.
3. Dry powder inhaler: The dry powder inhalers (DPIs) are propellant free and are designed for easier use. The dry powder inhaler has the advantage over MDI that no hand-lung coordination is required and it also can be easily used by children, elderly and arthritic patients. For the proper use of the dry powder inhaler following steps are recommended:
  - Step 1: Insert a rotacap, transparent end first, into the raised square hole of the DPI
  - Step 2: Rotate the base of the DPI in order to separate the two halves of the rotacap
  - Step 3: Breathe in as deeply as you can
  - Step 4: Hold your breath for 10 s
  - Step 5: Breathe out slowly
  - Step 6: After each use, pull the two halves of the DPI apart and throw away the loose capsules
  - Step 7: Reassemble the DPI
  - Step 8: Repeat the above steps if more than one rotacap is prescribed
4. Nebulizer: Nebulizer is the device which changes liquid medicine into fine droplets (in aerosol or mist form) that are inhaled through a mouthpiece or mask. These are very useful in children under 2 years of age, patients with

severe attacks of asthma unable to produce sufficient inspiratory effort and those lacking the coordination to use the MDI. But the disadvantages are that they are costly and also run on electricity and so are not beneficial to the patients living in the rural area where electricity may be lacking.

5. Baby mask: This is a specialized device that makes it easy for a pediatric patient to use the inhaler. It is an ideal device for pediatric patients when the nebulizer is not available. The pharmacist should advise the patient's caregiver regarding the proper use of the baby mask.

#### 4. Counseling regarding lifestyle modifications <sup>[14,15]</sup>

Like any chronic illness patients, the asthma patients should adopt certain lifestyle modifications. These lifestyle modifications are mentioned below:

1. Avoiding/recognizing asthma triggers: The patients should be informed that even in well-controlled patients the asthma attack can occur if these patients are exposed to asthma triggers. The examples of asthma triggers include dust mites, smoke, pollen grains, animal proteins (dander, urine, oil from skin), house dust/dust mites, cockroaches, certain foods, etc. The patient should be counseled so that he/she will be able to recognize his/her asthma triggers.
2. Wearing face mask: In case if it is not possible for the patient to prevent exposure to his/her asthma triggers, he/she should be advised to wear a mask on such occasions.
3. Over-the-counter medications: Some of the over-the-counter (OTC) medications can also lead to an asthma attack. The patient should be advised not to take any medications that can increase the risk of getting an asthma attack. These medicines include Aspirin, Indomethacin, Ibuprofen, Naproxen, etc.
4. Exercise: Strenuous exercises can also increase the risk of developing an attack. In such cases, the patient should take a prophylactic dose of the drug (usually salmetrol) before going for exercise.
5. Cold temperature: Cold temperature can precipitate an attack, and hence asthma patients should be advised to wear proper warm clothes during the winter season.
6. Emotion/stress: Excessive emotional stress, anger, etc. it can also cause an asthma attack, and hence the patients should be asked to avoid such instances.
7. Smoking: Since cigarette smoking is a known trigger factor for asthma, the patients should be advised cessation of smoking.

#### Asthma counseling in special populations <sup>[16]</sup>

The type of counseling needed may require modifications in case of specific populations. Some of the specific populations that require special counseling are mentioned below:

1. Pregnant patient should be informed that adequate control of asthma will protect the fetus. A better control of asthma will give a better outcome. The pregnant patient should be advised not to take any medications without consulting the doctor.
2. In case of children, the mother should be taught to use the

baby mask. The children should be given prophylactic drug before going for sports, playing, entering into the swimming pool, etc.

3. Elderly patients are at higher risk of developing hypertension. Added to this, asthma patients taking theophylline may have increased blood pressure. Moreover, if these patients are on steroid preparations for a long period, they should have periodic checkup for the systemic side effects due to steroids.

### Counseling regarding self-monitoring of therapy

Self-monitoring is an essential strategy to improve outcomes in chronic illnesses like asthma. The pharmacist can help the patient in understanding the use of peak flow meter. Once the patient starts using the peak flow meter, he/she can monitor the improvement of his/her lung function. Based on this, the patient can plan his/her medication strategy.

### Strategies to enhance outcomes of counseling <sup>[17]</sup>

Non-adherence is one of the major problems with inhaled medications. Therefore, counseling plays an important role in improving adherence. A number of strategies have been proposed to enhance adherence:

1. Use of placebo inhalers While counseling asthma patients, the pharmacist can use placebo inhalers so that it becomes easy to demonstrate to the patient.
2. Distribution of patient-information leaflets Locally prepared patient-information leaflets can help patients understand the disease, medications and lifestyle modifications in a better way.
3. Use of audiovisual aids Audiovisual aids can make illiterate asthma patients understand the disease, medications and lifestyle modifications.

### Worldwide studies on counseling asthma patients <sup>[18, 19, 20, 21, 22]</sup>

There have been several studies that have evaluated the impact of pharmacist-provided counseling and educational initiatives on outcomes of asthma medications. Some of them are discussed below.

A comprehensive asthma education and monitoring program was implemented in the community pharmacies (11 controls, 11 interventions) in Malta. Intervention patients received verbal counseling, an educational video, an information leaflet and subsequent monitoring with reinforcement; control patients received routine dispensing services. The study found out that the health-related quality of life of the intervention patients improved at 12 months, and the use of inhaler technique improved in the intervention group ( $p = 0.021$ ). There were significantly fewer self-reported hospitalizations in intervention patients. The study concluded that the community-based pharmaceutical care program was appreciated by the participants and had a positive impact on the vitality of patients with asthma. Patient's use of a newly prescribed inhaler was evaluated on the basis of pulmonary function test (PFT) results and the number of steps of an 11-step inhaler sequence that were completed correctly. Adult male outpatients with mild to moderate chronic obstructive pulmonary disease were assigned to a counseled ( $n = 10$ ) or non-counseled ( $n = 9$ ) group. The counseled group was

instructed by a pharmacist on the correct use of the inhaler; the non-counseled group was not. Counseled patients had a significantly higher mean percentage change in forced expiratory volume in one second (FEV1) after inhaler use than did the non-counseled group. The mean number of steps missed was significantly greater for the non-counseled group, and there was a significant negative correlation between the number of steps missed and the percentage change in FEV1. Pharmacists or pharmacy students provided oral and written asthma education in the subject's native language. Self-reported use of valve-holding chambers and peak flow meters; self-reported asthma symptoms at baseline and 6 months after intervention; number of acute asthma-related (non-routine, non-follow-up) clinic visits during the 6 months before and after the intervention were studied. Thirty-two subjects, aged 42 to 88 years, participated. Subjects demonstrated a reduction in mean number of asthma attacks (from 3.7 to 1.0,  $P < 0.001$ ) and night awakenings (from 1.4 to 0.3,  $P < 0.001$ ). Patient satisfaction with the program was excellent. Spacer and peak flow meter use increased from 7 to 18 subjects ( $P < 0.001$ ) and 1 to 14 subjects ( $P < 0.0002$ ) respectively. The study concluded that language-appropriate asthma education improved treatment outcome for patients whose native language was not English.

### Conclusion

It is well accepted that chronic diseases like asthma contribute a lot in terms of human suffering, economic wastage and mortality. Pharmacist being an important member of the health care team should make efforts to counsel the patients suffering from asthma regarding their disease, medications and lifestyle modifications. If proper counseling is provided to these patients, patient adherence can be improved, leading to better therapeutic outcomes. Added to the above outcomes, the counseling also provides professional satisfaction to the counseling pharmacist.

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