The management of allergic rhinitis by pharmacists in public services: a proposed PhaRmacISt-led Education Model (AR-PRISE)

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Abstract

Allergic rhinitis has been identified as a major respiratory disease that places a significant burden on patients and the healthcare system. Nevertheless, the management of allergic rhinitis is challenging for both patients and practitioners. Pharmacists have been recognised as strategic in providing advice for allergic avoidance, disease information, and pharmacological care for allergic rhinitis management. This role has been underutilised in the public health service sector in Malaysia due to variation in practice, regulation, and health system structures when compared to the international guidelines. This article proposed a PhaRmacISt-led Education Model (AR-PRISE) that includes explicit patient education materials and an algorithm for structured counselling by pharmacists in the management of patients with allergic rhinitis.

Keywords: Allergic rhinitis, Public health service, Pharmacist, Patient education, Educational model

Introduction

Allergic rhinitis has been recognised as one of the major respiratory diseases, involving chronic inflammation of the nasal membrane and commonly manifests as nasal congestion, nasal itching, rhinorrhea, and sneezing [1]. Globally, it affects 10–30% of adults and 40% of children, and the prevalence has been increasing in the last two decades [2, 3]. In Malaysia, the prevalence of 21–24% in adults and 18.8% in adolescents are reported [4, 5].

The burden attributed to allergic rhinitis management has been significant. Notably, the indirect costs of management, such as absenteeism and presenteeism from school or work, have been greater than the direct costs of treatment for this disease. The indirect cost is estimated to be 5.2 billion USD vs. 3.4 billion USD (direct cost) per year in the U.S. A similar trend of economic burden is seen in most countries (Table 1) [6]. The economic burden in Malaysia has not been comprehensively reported so far.

The factors contributing to the burden of this disease can be examined through the lenses of patients and healthcare providers. In the patients’ perspectives, the study found that patients self-managed the disease based on their own experiences. They tend to seek information from a variety of sources, including family, friends, spouses, and healthcare providers [7]. Patients do not fully understand this disease, are dissatisfied with the treatment, and a cure is not available for the problems encountered [8]. They commonly regard allergic rhinitis as a minor issue, resulting in non-adherence to pharmacotherapy and self-medicating when symptoms flare [9, 10].

The healthcare providers routinely dispensed medication and provided recommendations, but very few
follow-up opportunities were observed, and patients frequently continued to adopt this advice over the long term without evaluation [7]. The Allergic Rhinitis and its Impact on Asthma (ARIA) guidelines have been used by health care professionals internationally for allergic rhinitis management [1, 11]. A lack of knowledge of ARIA among pharmacists is observed as evidenced by insufficient counselling and treatment selection by pharmacists in allergic rhinitis management [12]. In a recent study, it was found that 40.4% of Malaysian pharmacists have inadequate awareness of the ARIA guidelines [13].

**Fundamental management strategy**

The ARIA guidelines emphasise that the fundamental approach to allergic rhinitis management is firstly having patients understand the overall aspect of this disease, instead of focusing on the use of intranasal administration techniques [22]. This includes patients’ having an adequate understanding of the disease nature and progression, pharmacotherapy, and non-pharmacological management (allergen avoidance). To get the patient to buy-in the concept of allergic rhinitis management, the fundamentals of the management should always be started with patient education, which has been reiterated by ARIA guidelines since 2008 [1].

Improvement in the understanding of allergic rhinitis would help patients change their expectations of medication treatment from expecting “a total cure of disease” to “disease control”. Concise, unbiased, and accurate information could improve patients’ understanding of their medication, its benefits and risks, and generate realistic expectations, all of which would promote adherence. Subsequently, the progression to complications of allergic rhinitis, such as chronic rhinosinusitis or worsening of underlying asthma control, which results in a higher burden to the health system, can also be avoided [7, 10, 23].

Nonetheless, patient education materials with regard to allergic rhinitis management have been unstandardized and varied in their styles and comprehensiveness. In the U.K., the patient leaflets had no publication date (47%), were at least 5 years (30%), contained inadequate information for management and therapy (42%), and contained inaccurate information (79%) [24]. Besides, a study in Australia shows that patients sought advice from various resources, including pharmacists, family and friends, the internet, and the media. Of concern, some of the information obtained is often inadequate, inconsistent, fragmented, and has not been reviewed by the subject matter experts [7]. In Malaysia, online information on allergies has not been updated periodically [25].

**A local standard of pharmaceutical care**

The widely used ARIA pharmacy guidelines focus on managing allergic rhinitis by community pharmacists [22]. In western countries, most people with allergic rhinitis seek healthcare services from community pharmacists. The community pharmacy management algorithm begins with disease identification, then severity assessment, and, if needed, primary care practitioner referral. This structure might not be feasible in countries practicing private and public services, such as the Malaysian health system. The lack of a dispensing separation policy in private primary healthcare limits community pharmacists’ involvement in Malaysia [26]. Specific allergic rhinitis management guidelines in the local setting are lacking [27]. The ARIA pharmacy management recommends creating a local standard of care by addressing variances in pharmacy practice, infrastructure, personnel, and regulations in each country [11].
Role of Pharmacists
Studies have shown that pharmacists are impacting the care of chronic diseases by improving adherence to proper medication regimens, a key factor in the improvement of patient outcomes.

The pharmacists have been described as having a key role in providing allergic rhinitis management information beyond medication advice [22]. These include disease identification, allergen avoidance strategies, risk–benefit of treatment, promoting patient self-management, patient support, and follow-up care. They are perceived to have time to educate patients and the ability to improve health outcomes, especially in cases with suboptimal control [7, 22, 28]. "Pharmaceutical services" from pharmacists who have been trained in allergic rhinitis management improves patients’ symptom control and quality of life. [12].

AR-PRISE model
Recognising the importance of pharmaceutical care and the potential expansion of the roles of pharmacists, we propose a local standard of care led by pharmacists that incorporates patient education and the algorithm of pharmaceutical care in allergic rhinitis management. This proposed model is specifically designed for public services, including hospitals and primary care clinics. Our proposed PhaRmacISt-led Education model (AR-PRISE) aims to improve patient understanding of the overall aspects of allergic rhinitis disease and its management. Besides, this model includes patients’ obtaining support from healthcare providers, particularly the pharmacist in the allergic rhinitis management. The goal of this structured care is to help patients feel more confident in their ability to deal with their long-term illness and control their symptoms as desired.

The aspect of patient education emphasises patients’ expectations of treatments, allergen identification and avoidance, and nasal product administration technique. This will be accomplished by providing patients with comprehensive written and/or audio–visual patient education.

Subsequently, patient support will be delivered via the pharmacist by following the algorithm of pharmaceutical care. This algorithm will guide the pharmacists in performing structured counselling for the patients, which includes assessing the patient’s disease severity, knowledge, and adherence to medication. Reassurance on the benefit of intranasal corticosteroids will also be provided. The pharmacist will also perform monitoring for symptom control, quality of life, and flare-up of allergic rhinitis. The pharmacist will be responsible for teaching the patient to identify the signs of allergic rhinitis flare-up and/or asthma exacerbation (if allergic rhinitis co-exists with asthma). A comparison of current practice and the proposed AR-PRISE model in overcoming these limitations is shown in Table 2 [29].

In the AR-PRISE model, moderate/severe allergic rhinitis patients will be referred to a pharmacist by a doctor. Patients will attend a session of comprehensive patient education and structured pharmacist counselling (Fig. 1). Baseline patient information will be collected, including socio-demography, illness severity grading, current medication (prescribed and OTC allergic rhinitis treatments), and quality of life. The subsequent follow-up of patients will be conducted by the pharmacist, which can be done virtually upon referral by the physicians when deemed necessary. The patients will be counselled on specific modules of education as deemed necessary and customised according to each patient’s needs. The pharmacist will then evaluate patients’ symptom control based on ARIA classifications, medication adherence, and quality of life. Should any symptoms warrant a doctor’s attention, pharmacists will forward the case to the otorhinolaryngology specialist without waiting for the scheduled clinic visit.

Additional content that will enhance the understanding of the fellow pharmacists with regard to allergic rhinitis management is added to the proposed AR-PRISE model. The contents include: the introduction of the disease; the burden to the health system caused by the disease; objectives of the protocol; scope of services; human resources requirements; procedures of execution (patient selection, clinic operation, and pharmacist’s responsibilities); non-pharmacological management; duration of visit; patient discharge criteria; documentation; and patient outcome measures. A stepwise management of allergic rhinitis treatment will be added to give the pharmacist a clearer picture of how to manage this disease.

Implementation of the AR-PRISE model
Endorsing the AR-PRISE model into practise requires collaboration between the pharmacy services and otorhinolaryngology services in the Ministry of Health. This involves holding a large-scale workshop to introduce this model to pharmacists. Evidence-based guidance for pharmacists should be provided with the goal of transferring the latest research findings into pharmacy practices.

Conclusions
The burden of morbidity and disability caused by allergic rhinitis has been underappreciated by healthcare providers and patients. Pharmacists are well-positioned to play an important role in the management of allergic rhinitis in Malaysian public healthcare institutions. The proposed AR-PRISE model portrays pharmacists’ duties in allergic rhinitis management and would expand their
| Content                                      | Current practice of outpatient pharmacy                                      | Proposed AR-PRISE model                                                                 |
|----------------------------------------------|------------------------------------------------------------------------------|----------------------------------------------------------------------------------------|
| Patient population                           | Patients with allergic rhinitis for all level of severity                     | Patient with moderate/severe allergic rhinitis                                         |
| Human resource requirement                   | • Medical doctors • Pharmacists in the public services                        | • Medical doctors • Pharmacists in the public services                                   |
| Disease identification                       | Diagnosis will be conducted by medical doctors                               | Diagnosis will be conducted by medical doctors and patient with moderate/severe allergic rhinitis is referred to the pharmacists |
| Symptoms control assessment                  | Symptoms control assessment will be performed by medical doctors              | Pharmacist assess and monitor symptom control by recording:                            |
|                                              |                                                                              | • Disease severity assessment using ARIA guidelines gradinga                           |
|                                              |                                                                              | • Symptom control assessment using total nasal symptom score, and                     |
|                                              |                                                                              | • Health-related quality-of-life assessment                                           |
| Treatment                                    | Medication will be prescribed by the medical doctors                         | Medication will be prescribed by the medical doctors                                   |
| Patient education                            | a. Disease nature Limited/unstructured                                      | Explaining the aetiology of allergic rhinitis and possible cure following allergy avoidance and adherence to pharmacotherapy |
|                                              | b. Allergen identification and avoidance Limited/unstructured                | • Explaining types of allergens                                                       |
|                                              | c. Pharmacotherapy Limited/unstructured                                      | • Recommending strategies in identifying and avoidance of allergens                    |
|                                              | d. Expectation of treatment effect Limited/unstructured                      |                                                                                       |
|                                              | e. Intranasal corticosteroid usage technique Verbal explanation in priming, administration and cleaning of nasal products (spray/drop), with the aid of product inserts/slides show when necessary | Verbal counselling in priming, administration and cleaning of nasal products (spray/drop) supplemented by written and/or audio-visual patient education material |
| Algorithms of pharmaceutical care in allergic rhinitis management for public services | A general counselling guideline for the pharmacist                            | Implementation of intensive structured counselling as specified in algorithm of pharmaceutical care (Fig. 1) on the first encounter |
|                                              | • Scope of services                                                          | • Patient selection criteria based on severity                                          |
|                                              | • General patient selection criteria                                         | • Disease severity assessment and monitoring                                          |
|                                              | • Work procedures                                                            | • Setting goal of treatment                                                            |
|                                              | • Assessment for medication knowledge                                         | • Assessment for medication knowledge, treatment expectation, technique of medication administration, and medication adherence |
|                                              | • Technique of medication administration and medication adherence             | • Reassurance for the benefit of intranasal corticosteroid                             |
|                                              | • Documentation of counselling and records management                        | • Addressing concerns of intranasal corticosteroid regular usage                       |
|                                              |                                                                              | • Teaching patient about the alert sign of asthma exacerbation and symptom flare of allergic rhinitis |

*a* ARIA guidelines grading: 
- I: Asymptomatic
- II: MILD
- III: MODERATE
- IV: SEVERE
Table 2 (continued)

| Content                                      | Current practice of outpatient pharmacy | Proposed AR-PRISE model |
|----------------------------------------------|----------------------------------------|-------------------------|
| Follow-up care                               | Counselling will be given when necessary  
• Mainly focusing on the technique of nasal product usage and adherence | Subsequent counselling will be performed when there is a referral by physician or when deemed necessary  
• Structured counselling will be applied by following the algorithm of pharmaceutical care (Fig. 1) |
| Patient discharge criteria                   | Not applicable                         | Aim to achieve mild allergic rhinitis based on physician judgement |
| General guide of pharmacotherapy in stepwise allergic rhinitis management for the knowledge of pharmacists | Limited/unstructured                   | Included |

* Intermittent: < 4 days per week or < 4 weeks at a time; Persistent: ≥ 4 days per week, and ≥ 4 weeks at a time; Mild: Normal sleep, daily activities, work/school and no troublesome symptoms; Moderate to severe: One or more of the symptoms including abnormal sleep, impairment of daily activities, sport, leisure, problem at work or school, troublesome symptoms
Assessing usage of corticosteroid nasal spray

Demonstrate corticosteroid nasal spray techniques in Priming, Administration & Cleaning.

Assessing & addressing patients’ concerns with the treatment.

New user

Evaluate patient’s corticosteroid nasal spray administration technique To correct their technique when necessary

Assess patients’ nasal spray adherence

Existing user

Comprehensive patient education

Patient disease severity and symptom control

No

Yes

Adherent?

Explain expectation of treatment effect

Reassuring the benefit of corticosteroid nasal spray.

To discuss with the medical doctor in-charge if uncertain about the queries from the patients or patients have problems with adherence.

Emphasize the importance of adherence & consequences of non-adherence.

Encourage patient to access the patient education materials from time to time.

Identifying symptom flare and action to be taken.

Emphasise the importance of adherence to asthma therapy (inhaler) if patient has co-existing of asthma

If asthma exacerbations occur, advise the patient to go to the emergency room immediately

Discharge patient from this protocol once mild level of severity is achieved.

Fig. 1 Algorithm of pharmaceutical care in the AR-PRISE model
public service role. Comprehensive patient education in the model would help the pharmacists to provide structured and standardised information. There is an urgent need for a multi-stakeholder approach to successfully implement this pharmacist-led educational model, which could result in better patient outcomes and burden reduction from allergic rhinitis management.

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