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MINISTRY OF HEALTH OF UKRAINE
NATIONAL UNIVERSITY OF PHARMACY
pharmaceutical faculty
department of pharmacology and clinical pharmacy

QUALIFICATION WORK

on the topic: «**THE ROLE OF THE PHARMACIST IN ENSURING THE APPROPRIATE LEVEL OF PHARMACEUTICAL CARE IN THE USE OF LORATADINE-BASED MEDICINES IN MOROCCAN PHARMACY VISITORS WITH ALLERGIC RHINITIS**»

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ANNOTATION

Salma BENABBOU. The role of the pharmacist in ensuring the appropriate level of pharmaceutical care in the use of loratadine-based medicines in Moroccan pharmacy visitors with allergic rhinitis. – The manuscript. – National University of Pharmacy of Ministry of Healthcare of Ukraine, Kharkiv, 2025.

The qualification work is devoted to the study of the pharmacist`s role in ensuring the appropriate level of pharmaceutical care in the use of loratadine-based medicines in Moroccan pharmacy visitors with allergic rhinitis.

Qualification work is presented on 43 pages of typewritten text, consists of summary, introduction, 3 chapters, conclusions, references. The work is illustrated with 6 tables, 7 figures. The list of references contains 38 resources.

Key words: allergic rhinitis, loratadine-based medicines, efficacy and safety of therapy, pharmacist, Moroccan patients

АНОТАЦІЯ

Салма БЕНАББУ. Роль фармацевта в забезпеченні належного рівня фармацевтичної допомоги при застосуванні лікарських засобів на основі лоратадину у марокканських відвідувачів аптек з алергічним ринітом. – На правах рукопису. – Національний фармацевтичний університет МОЗ України, Харків, 2025.

Кваліфікаційна робота присвячена вивченню ролі фармацевта в забезпеченні належного рівня фармацевтичної допомоги при застосуванні лікарських засобів на основі лоратадину у марокканських відвідувачів аптек з алергічним ринітом.

Кваліфікаційна робота викладена на 43 сторінках машинописного тексту, складається з резюме, вступу, 3 розділів, висновків, списку літератури. Робота проілюстрована 6 таблицями, 7 рисунками. Список літератури містить 38 найменувань.

Ключові слова: алергічний риніт, лікарські засоби на основі лоратадину, ефективність та безпека терапії, фармацевт, пацієнти із Марокко

CONTENT

INTRODUCTION

Relevance of the Topic. Allergic rhinitis (AR) is a common and long-lasting allergic condition that has a considerable impact on individuals' health and quality of life across the globe. It presents with symptoms like nasal blockage, sneezing, runny nose (rhinorrhea), nasal itching, and postnasal drip. Although these symptoms are not life-threatening, they can greatly disrupt daily functioning, decrease productivity, and diminish overall well-being. AR is typically triggered by allergens such as pollen, dust mites, pet dander, and mold, making it a widespread issue in both urban and rural settings [3].

The rising incidence of AR, particularly in developing nations, is driven by various factors, including environmental pollution, changes in climate, and urban development. As industrial activities expand, air quality worsens, increasing exposure to airborne allergens and irritants that can intensify allergic responses. This escalating public health issue has resulted in more frequent medical visits, greater use of both over-the-counter and prescription medications, and a surge in healthcare spending for diagnosis, treatment, and symptom control [21].

In addition to its physical manifestations, AR has significant social, economic, and psychological impacts. Those affected by AR may suffer from reduced work efficiency, missed days at work or school, sleep problems, and impaired cognitive function, all contributing to a lower standard of living. Children with AR often face academic difficulties due to problems with focus and fatigue. Furthermore, the financial burden of AR is substantial, not only due to medical expenses but also because of its effects on work productivity and academic outcomes [36].

Medically, AR is strongly associated with other respiratory diseases, especially asthma. Studies show that many individuals with AR also develop asthma, underscoring the necessity for timely diagnosis and proper management. If left unmanaged, AR can lead to complications such as chronic sinus infections, frequent respiratory illnesses, and sleep-related breathing disorders, highlighting

the critical need for consistent medical care and adherence to treatment protocols [1].

In the management of allergic rhinitis, pharmacists serve a vital role, as they are often the initial point of contact for patients seeking relief from symptoms. They offer essential guidance on available treatment options, including antihistamines, intranasal corticosteroids, decongestants, and methods for avoiding allergens. Pharmacists' knowledge is key in helping patients use medications properly, remain compliant with treatment plans, and implement preventive strategies to reduce allergen exposure. Through evidence-based recommendations, pharmacists contribute to improved treatment outcomes and help decrease the frequency of unnecessary physician visits [22].

However, despite the availability of effective therapies, maintaining patient adherence to AR treatment continues to be a major challenge. Many patients stop treatment early due to limited understanding of the condition, doubts about the medication's effectiveness, concerns over side effects, or financial limitations. This lack of adherence can lead to ongoing symptoms, worsening of associated conditions, and increased demand for medical care. Counseling provided by pharmacists has been shown to enhance adherence by educating patients on the importance of consistent medication use and addressing concerns about safety and effectiveness [6].

Considering the growing prevalence of AR and the critical function pharmacists fulfill in its management, it is important to examine how pharmacists counsel patients and how this affects treatment adherence. This study focuses on these factors within the context of Moroccan pharmacies, aiming to assess current counseling approaches, patient experiences, and obstacles to adherence. Gaining insight into these areas can help strengthen pharmaceutical care, improve patient education, and refine AR management strategies to achieve better health outcomes.

By exploring this topic, the research adds to the broader disciplines of pharmacy practice and public health, highlighting the importance of pharmacist-patient communication in managing chronic conditions. Additionally, the study's

findings could inform policymakers and healthcare professionals in developing targeted strategies to boost adherence and improve disease control, ultimately easing the long-term burden of AR on individuals and the healthcare system.

The aim of the study. The aim of the work is to study the role of the pharmacist in ensuring the appropriate level of pharmaceutical care in the use of loratadine-based medicines in Moroccan pharmacy visitors with allergic rhinitis.

The objectives of the study. Objectives of the work are the following:

1. To study the basic information about allergic rhinitis, including its causes, symptoms, prevalence, and impact on patients' quality of life.
2. To examine modern approaches to the pharmacological treatment of allergic rhinitis, with a focus on loratadine-based therapy and analyze the role of pharmacists in ensuring proper pharmaceutical care for Moroccan pharmacy visitors suffering from allergic rhinitis.
3. To assess the level of medication adherence among Moroccan patients using loratadine-based medications for allergic rhinitis treatment and to evaluate the opinions and beliefs of Moroccan pharmacy visitors regarding the efficacy and safety of allergic rhinitis medications.
4. To develop practical recommendations for pharmacists to improve counseling strategies and optimize the rational use of medicines for allergic rhinitis management.

Object of research. Pharmaceutical care and medication adherence in Moroccan patients with allergic rhinitis while using loratadine-based medicines.

Subject of research. The role of pharmacists in influencing medication adherence and the rational use of loratadine-based medications among Moroccan pharmacy visitors with allergic rhinitis.

Research methods. The methodological basis of the study is the principles of objectivity and consistency. The work employs a combination of general scientific and specialized research methods, including theoretical analysis, literature review, data systematization, comparison, survey method, statistical analysis, and interpretation of the obtained results.

Structure and scope of qualification work. The qualification work is presented on 43 pages of typewritten text and consists of a summary, introduction, three chapters, conclusions, and references. The work is illustrated with 6 tables and 7 figures. The list of literature contains 38 references.

CHAPTER 1

MODERN PRESENTATION ABOUT ALLERGIC RHINITIS MANAGEMENT (LITERATURE REVIEW)

1.1. Allergic rhinitis: information and facts

Allergic rhinitis is an inflammation of the inside of the nose caused by an allergen. It is a very common disease that affects about 20% of people. Currently, there is more and more information about the growing incidence of allergic rhinitis. This is attributed to environmental degradation, uncontrolled use of antibiotics, inadequate and unbalanced nutrition, use of preservatives, etc. [38].

It is customary to distinguish between seasonal and year-round rhinitis. In most cases, seasonal rhinitis is caused by plant pollen. The period from April to May is characterized by the flowering of birch, alder, hickory, oak, ash, maple, poplar, hazel, elm, willow, juniper, etc.

Allergic rhinitis is an abnormal reaction of the human immune system to contact with allergens. The pathology occurs when an allergen combines with IgE immunoglobulins, resulting in the active production of histamine, which causes rhinitis [33].

Allergic rhinitis is caused by an overreaction of the immune system to allergens – things that are not usually dangerous for most people, but cause an inflammatory reaction in people with hypersensitivity. The main causes of allergic rhinitis include [2, 8, 15, 16, 19]:

Genetic predisposition. According to studies, children in whom one of the parents has allergic diseases have about 30-50% chance of also getting this predisposition, and if both parents are allergic – up to 70%.

Plant pollen (seasonal allergic rhinitis or pollinosis) is one of the most common causes of allergic rhinitis. Most often, allergies are caused by:

in spring – tree pollen (birch, alder, oak, poplar);

in summer – cereal grass pollen (timothy ryegrass, wheatgrass, feather grass)

in the fall – weed pollen (ragweed, quinoa, wormwood).

Pollen allergies can be exacerbated on windy days when the concentration of pollen in the air is highest.

Dust mites and house dust, which can be found in pillows, mattresses, carpets and feed on dead human skin cells. Their waste products are powerful allergens and can cause chronic allergic rhinitis that lasts all year round.

Animal hair, saliva, and dander due to the proteins contained in these substances. Many people mistakenly believe that allergies are caused by the wool itself, but in fact, the allergens are proteins that are deposited on the wool.

Mold and fungal spores that spread in the air and cause allergic rhinitis, especially during periods of high humidity.

Food allergens due to cross-allergies, when the immune system reacts to similar proteins in food and in pollen. For example, people allergic to birch pollen may react to apples, carrots, nuts, or peaches.

Certain chemicals can also cause or exacerbate allergic rhinitis. These include tobacco smoke, exhaust fumes and air pollution, harsh perfumes, air fresheners, detergents, paints and varnishes. Although these substances are not allergens in themselves, they can irritate the nasal mucosa and exacerbate the symptoms of allergic rhinitis.

Climatic factors, such as temperature, cold air, high humidity, or vice versa, dryness, can trigger or exacerbate the symptoms of allergic rhinitis. For example, people who are sensitive to cold may develop a runny nose in the cold due to a reflex reaction of the nasal mucosa.

The main symptoms and signs of allergic rhinitis include [4, 7, 14, 28] (Fig. 1.1):

- runny nose with clear discharge and frequent sneezing
- nasal congestion that makes breathing difficult;
- itching in the nose, throat and eyes that causes discomfort;

- tearing and redness of the eyes, which may be accompanied by swelling of the eyelids;
- cough and irritation in the throat due to mucus flowing down the back of the nasopharynx;
- headache and pressure in the sinuses due to swelling of the mucous membrane;
- fatigue and sleep disturbances caused by difficulty breathing.

Symptoms can occur seasonally (for example, in case of pollinosis) or last all year round if contact with the allergen is constant. If such symptoms recur or persist for a long time, it is important to consult a doctor for diagnosis and treatment.

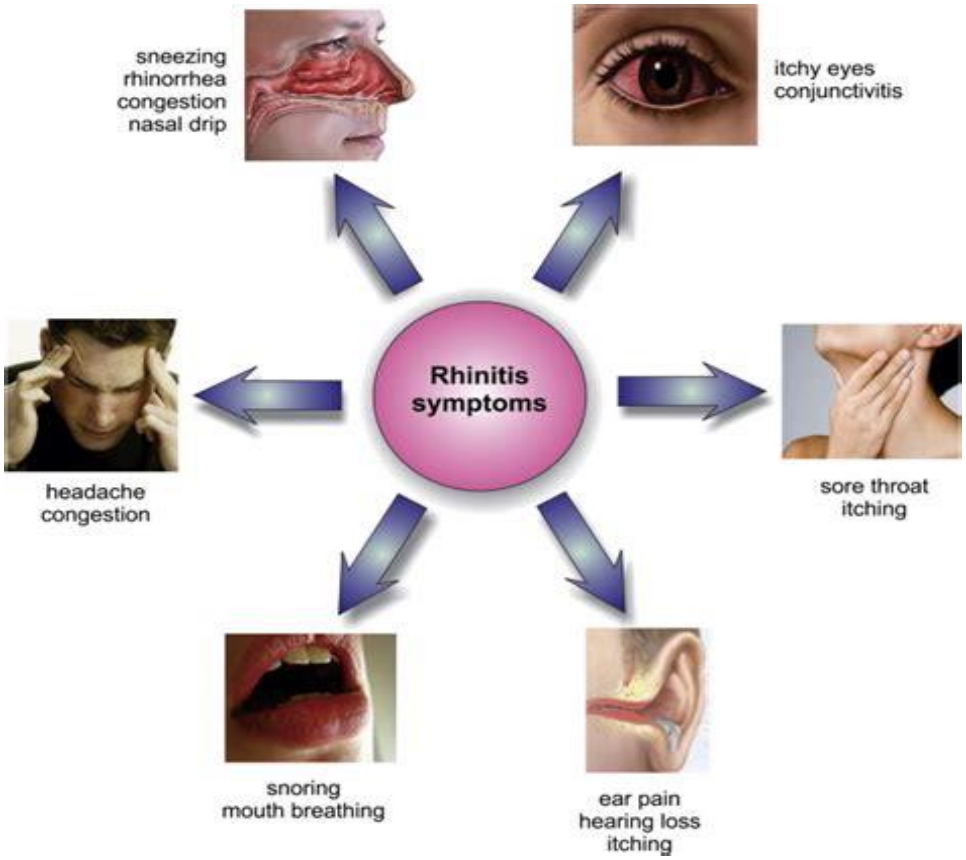

Fig. 1.1. Allergic rhinitis symptoms

Although the range of prevalence of AR is wide, it should be borne in mind

that published studies may differ in their definitions of AR, and some may consider AR to be allergen sensitization.

Since sensitization takes several years to develop, it is unlikely that children under 2 years of age will develop AR, usually the disease debuts in school age. AR is often the result of an overreaction of Th2 lymphocytes and the initiation of systemic IgE-mediated reactions that dominate the child's immune system until maturity [9, 12].

In patients with atopy, contact with allergens causes rapid production of allergen-specific IgE (sIgE). Subsequently, exposure to allergens triggers both early and late reactions, which leads to clinical manifestations of AR. The early reaction usually occurs within minutes after reintroduction of the sensitized allergen, causing rapid onset of nasal itching, nasal congestion, and rhinorrhea [5].

A late reaction often occurs within 4-8 hours after repeated contact with the allergen and leads to hyperemia, hyposmia, increased anterior and posterior rhinorrhea, and nasal hypersensitivity.

According to the Allergic Rhinitis and its Impact on Asthma (ARIA) Guidelines, AR is classified according to the probable causes and time during which symptoms develop, as well as according to the duration and persistence of symptoms and severity (mild/moderate/severe). Thus, AR is divided into seasonal AR (SAR; hay fever) and year-round AR (YAR). SAR is usually associated with exposure to environmental allergens, such as pollen, and occurs during seasons with high pollen concentrations in the air. CAR is typically caused by indoor allergens such as house dust mites (HDMs), insects, and animal dander [4, 37]. Contact with mold can occur both indoors and outdoors.

It is worth noting that the division of AR into ATS or CAR can be controversial. For example, symptoms of ATS may be observed over a longer period of time due to climate change, which leads to the longer presence of elevated pollen concentrations. ATS may also occur over several seasons due to polysensitization. At the same time, CAP may not occur throughout the year. This is especially true for patients with CDP allergy, who may have mild or

moderate/severe intermittent AR [10, 11].

As mentioned above, ARIA proposed a new classification based on the duration and persistence of symptoms. Intermittent AR is characterized by the presence of symptoms for <4 days per week or <4 weeks in a row. Persistent AR is characterized by the presence of symptoms on >4 days per week for at least 4 consecutive weeks. In addition, it has been demonstrated that the previous division of AR into SAD and CAR cannot be used in conjunction with the new classification of the disease, according to which intermittent or persistent AR is distinguished, as they represent a different approach to defining the condition. Thus, the terms intermittent AR and persistent AR are not synonymous with SAR and CAR.

The ARIA guidelines also proposed a classification of AR by severity (mild, moderate, and severe) to take into account the characteristics of the symptoms. AR can lead to significant impairment of quality of life, including interference with sleep, daily activities, rest, or physical activity; impaired performance at school, work, or debilitating symptoms. AD is considered mild if these symptoms do not occur. If one or more of these symptoms are present, AD is classified as moderate/severe [11].

1.2. Modern medication allergic rhinitis therapy

A broad range of pharmacological therapies is currently available for the treatment of allergic rhinitis (Table 1.1). Modern treatment strategies aim not only to alleviate symptoms and enhance patients' quality of life but also to prevent potential complications associated with the condition. The following outlines the primary categories of medications used in managing AR [13, 26, 27, 34, 35]:

1. *Intranasal Corticosteroids (INCS)*

Intranasal corticosteroids are considered the most effective first-line therapy for patients with moderate to severe allergic rhinitis. These medications work by reducing inflammation in the nasal passages, thereby alleviating symptoms such as nasal congestion, sneezing, and itching.

Table 1.1

Treatment of allergic rhinitis

Drug Class	Examples	Mechanism of Action
Oral Antihistamines	Loratadine, Cetirizine, Fexofenadine	Block H1 histamine receptors → reduce sneezing, itching, and runny nose
Intranasal Antihistamines	Azelastine, Olopatadine	Direct local H1 blockade in nasal tissue
Intranasal Corticosteroids	Fluticasone, Mometasone, Budesonide	Reduce nasal inflammation and allergic response
Oral Decongestants	Pseudoephedrine	Constrict blood vessels in nasal passages
Intranasal Decongestants	Oxymetazoline, Xylometazoline	Local vasoconstriction in nasal mucosa
Leukotriene Receptor Antagonists	Montelukast	Block leukotriene receptors → reduce inflammation and bronchoconstriction
Mast Cell Stabilizers	Cromolyn sodium	Prevent histamine release from mast cells
Allergen Immunotherapy (AIT)	Sublingual tablets, SC injections	Gradual desensitization to allergens
Saline Nasal Sprays/Rinses	-	Moisturize nasal mucosa, clear allergens

Common examples include:

- Fluticasone propionate (Flonase)
- Budesonide (Rhinocort)
- Mometasone furoate (Nasonex)
- Beclomethasone dipropionate (Beconase AQ)

Benefits:

- highly effective at controlling nasal symptoms
- minimal systemic absorption, which lowers the risk of side effects
- considered safe for long-term use when monitored appropriately

2. *Oral and Intranasal Antihistamines* [23]

When used as recommended, second-generation antihistamines are favored over first-generation options due to their minimal sedative effects and longer duration of action.

Examples of Second-Generation Antihistamines:

- Cetirizine (Zyrtec)
- Loratadine (Claritin)
- Fexofenadine (Allegra)
- Desloratadine (Aerius)

Advantages:

- effectively relieve symptoms such as sneezing, itching, and runny nose
- cause less drowsiness compared to first-generation antihistamines
- provide rapid symptom relief

Intranasal antihistamines, such as Azelastine, may offer additional benefits in relieving nasal congestion and are often used in combination with intranasal corticosteroids.

3. *Leukotriene Receptor Antagonists (LTRAs)*

LTRAs work by inhibiting leukotrienes, which are inflammatory substances involved in the development of AR symptoms. These medications are especially useful for individuals who also suffer from asthma.

Common LTRA:

- Montelukast (Singulair)

Benefits:

- Particularly beneficial for patients with both AR and asthma
- Can be used alongside antihistamines or corticosteroids for enhanced effect
- Oral administration improves treatment adherence

4. *Decongestants*

Decongestants help relieve nasal congestion by narrowing the blood vessels within the nasal passages. They are available in both oral and topical (nasal spray) forms.

Common Decongestants Include:

- Pseudoephedrine (Sudafed) – oral
- Oxymetazoline (Afrin) – nasal spray

Important Considerations:

- Nasal decongestant sprays should not be used for more than three consecutive days to avoid rebound congestion (*rhinitis medicamentosa*)
- Oral decongestants can elevate blood pressure and are not recommended for individuals with hypertension

5. Biologic Therapies

For individuals with severe and treatment-resistant allergic rhinitis, biologic drugs that target specific components of the immune system are available.

Common Biologic Agents Used in AR Treatment:

- Omalizumab (Xolair*)* – a monoclonal antibody that blocks IgE
- Dupilumab (Dupixent) – targets interleukin-4 (IL-4) and interleukin-13 (IL-13) pathways

Advantages:

- Highly effective in patients with severe AR, especially those with coexisting asthma
- Provides a personalized treatment strategy based on immune system mechanisms
- Can reduce the need for corticosteroids

6. *Immunotherapy (Allergen-Specific Immunotherapy – AIT)*

Allergen immunotherapy, which includes allergy injections and sublingual tablets or drops, works by modifying the immune system's response to allergens rather than just suppressing symptoms.

Types of AIT:

- *Subcutaneous Immunotherapy (SCIT)* – Involves regular injections administered under the skin
- *Sublingual Immunotherapy (SLIT)* – Involves placing allergen tablets or drops under the tongue

Benefits:

- the only treatment capable of changing the long-term course of allergic rhinitis
- can offer lasting symptom relief for several years
- may help prevent the development of asthma

Immunotherapy is particularly recommended for patients with severe AR who do not respond adequately to conventional drug treatments.

When treating patients with AR, one should be guided by the criteria of effectiveness and expected therapeutic results. The immediate efficacy criteria include elimination/significant reduction of AR manifestations – stuffiness, nasal discharge, itching, sneezing, restoration of olfactory function, and improvement of patients' quality of life.

The delayed effect is that adequate treatment of AR is a preventive measure to prevent the transformation of AR into bronchial asthma, which ensures long-term use of topical corticosteroids. Another criterion is to prevent the development of new diseases/complications (primarily drug-induced rhinitis). Another problem of uncontrolled AR is the development of polysensitization and allergies to drugs, often fungal lesions [17, 20, 31].

AR has a major impact on the quality of life patients and their social activity, which is associated with physical and psychological limitations in everyday life, sleep and appetite disorders. In general, AR causes a negative psychoemotional

state in the patient, significantly reduces the patient's quality of life, disrupting daily activity and reducing productivity, including in professional activities [30].

Thus, adequate treatment of patients with AR ensures complete adequate control of the disease and prevention of its transformation into other, more severe forms.

Conclusions for chapter 1

1. Allergic rhinitis is one of the most common chronic inflammatory disease affecting the nasal airways, it has been recognized for many people worldwide. Allergens like pollen, dust mites, and pet dander can trigger it, and both environmental and genetic factors can influence its development. Millions of people worldwide are afflicted with allergic rhinitis, which affects the quality of life significantly through symptoms such as sneezing, nasal airway congestion, and itching, and commonly overlaps with other respiratory conditions such as asthma.

2. The options for the treatment of allergic rhinitis must be personalized according to the severity of the symptoms, patient preference, and co-morbid conditions. The most effective treatment is the use of intranasal corticosteroids, with antihistamines, leukotriene receptor antagonists, and biologic therapies being other options for symptom control. Immunotherapy provides a sustainable solution for those who written in mildly severe and easy allergic rhinitis

CHAPTER 2
MATERIALS AND METHODS

The experimental part of the master thesis was conducted in collaboration with Al Ikhwa Fez pharmacy, Morocco. The study was conducted in the period from September 04, 2023, to August 30, 2024. Our study included pharmacy visitors who were diagnosed with allergic rhinitis.

For the purposes of the master thesis, a questionnaire was developed for surveying patients'/pharmacy visitors with allergic rhinitis (Table 2.1). The questionnaire included questions of a general nature regarding age, gender, genetic predisposition, as well as specific questions related to allergic rhinitis control, medication adherence, and quality of life. Particular attention was also paid to the assessment of criteria of efficacy and safety in allergic rhinitis patients. The study analyzed the drugs used by respondents and compared them with current recommendations of ARIA 2023. Materials were presented in hard copy, and there was also (optionally) an opportunity to take a Google Form survey.

Based on the results of the survey, practical recommendations for physicians, pharmacists, and patients were developed regarding alternative ways to improve treatment adherence in Moroccan allergic rhinitis patients. Additionally, the information material was grouped and organized in the form of memos for patients. This information material was offered to pharmacy visitors in order to raise their awareness of the effectiveness and safety of allergic rhinitis therapy.

The methodological basis of the study is the principles of objectivity and consistency. The study employs a complex of general scientific and special methods: theoretical analysis, generalization, data systematization, comparison, methods of studying literary sources, analysis, questionnaire method, statistical methods, etc.

The data obtained from the experimental study were analyzed and presented in the form of tables and diagrams to illustrate the results.

Table 2.1

Questionnaire for patients / pharmacy visitors with allergic rhinitis

1.	Sex and age	
2.	Smoking status: ex-smoker, non-smoker, passive smoker, active smoker?	
3.	How long have you had allergic rhinitis ?	
4.	Do any of your immediate family members suffer from allergic rhinitis? Yes / No	
5.	What comorbid, chronic diseases do you have?	
6.	What are the main manifestations of this disease?	
7.	Which medicines do you use to control allergic rhinitis?	
8.	Effect of therapeutic patient education on all control: well-controlled, particularly controlled, uncontrolled?	
9.	Effect of therapeutic patient education on medication adherence: high adherence, medium adherence, low adherence?	
10.	Effect of therapeutic patient education on quality of life: good, average, low?	
11.	What criteria of treatment effectiveness are most important to you?	
12.	What side effects did you experience most often during the allergic rhinitis therapy? By which groups of medications?	
13.	Do you follow the rules for rational prescribing of medicines?	
14.	How often do you see your doctor and monitor your condition?	
15.	Does this disease affect your quality of life?	

Conclusions for Chapter 2

1. The experimental component of the master thesis has been carried out at the pharmacy Al Ikhwa Fez, Morocco. In this study, there were 50 pharmacy visitors, having allergic rhinitis, for the survey.

2. A questionnaire was prepared containing general and specific questions about allergic rhinitis control, adherence to treatment, and quality of life. Secondary outcomes included measures of efficacy and safety, specific to patients with allergic rhinitis.

CHAPTER 3

THE ROLE OF THE PHARMACIST IN ENSURING THE APPROPRIATE LEVEL OF PHARMACEUTICAL CARE IN THE USE OF LORATADINE-BASED MEDICINES IN MOROCCAN PHARMACY VISITORS WITH ALLERGIC RHINITIS (EXPERIMENTAL PART)

3.1. Survey of Moroccan pharmacy visitors concerning allergic rhinitis management

Allergic rhinitis is a widespread condition that affects a considerable segment of the Moroccan population, manifesting through symptoms such as sneezing, nasal blockage, runny nose (rhinorrhea), and itching. Loratadine, a widely used second-generation antihistamine, is favored for its effectiveness in relieving symptoms and its non-drowsy profile. Considering the key role pharmacists play in advising patients and promoting adherence to medication, this study examines the experiences, awareness, and adherence behaviors of pharmacy visitors using loratadine-based treatments.

Globally, allergic rhinitis is a prevalent chronic disease that affects millions and has a substantial negative impact on quality of life and daily functioning.

In Morocco, the increasing incidence of AR is influenced by factors such as environmental pollution, seasonal pollen exposure, and urbanization. Although effective treatment options exist, many individuals rely on self-medication through pharmacies due to accessibility, affordability, and limited medical consultations.

This section outlines the results of a detailed survey conducted among pharmacy visitors in Morocco to evaluate their knowledge, attitudes, and practices regarding AR treatment, with a particular emphasis on loratadine usage.

A total of 50 pharmacy visitors participated in the survey. Eligibility criteria

included a confirmed diagnosis of allergic rhinitis, current or prior use of loratadine-based medication, and voluntary consent to participate. The key demographic and clinical characteristics of the participants are summarized in Table 3.1.

Table 3.1

Characteristics of surveyed pharmacy visitors with allergic rhinitis

#	Patients characteristics	Indicator	% from total amount
1.	Sex		
	Female	32	64.00
	Male	18	36.00
2.	Minimal age, years	20	
3.	Maximal age, years	65	
4.	Smoking patients	5	10.00

Among the 50 surveyed pharmacy visitors, 32 were females (64.0%) and 18 were males (36.0%). The average age of respondents was 41.8, with the youngest respondent being 20 years old and the oldest being 65 years old. 10% of respondents were smokers. All surveyed pharmacy visitors (100%) had experience with loratadine use, either as a current or past medication.

Loratadine, a widely utilized second-generation antihistamine, plays a central role in the treatment of allergic rhinitis due to its proven effectiveness and low sedative potential.

In Morocco, the pharmaceutical market provides a wide array of loratadine-based products, available in multiple dosage forms and under various brand names. This diversity caters to the needs of a broad patient demographic and reflects the growing demand for reliable allergy treatments.

The most commonly available formulation in Moroccan pharmacies is the

10 mg oral tablet, which serves as the standard dosage for adult patients.

Among the top brands, Claritine – marketed by Bayer – maintains a strong market presence thanks to its global reputation and consistent clinical efficacy. Alongside it, several locally produced generics, such as Loratadine Asafar and Loratin, offer equally effective, more affordable alternatives, thereby enhancing treatment accessibility for a wider population.

For pediatric patients, loratadine is primarily available in syrup form, typically formulated as 5 mg per 5 ml. These liquid preparations are designed to be easy to administer and are often flavored to improve taste and ensure better acceptance by children.

Products like New Loratadine and Loratadine Syrup by Asafar are frequently dispensed for pediatric use, ensuring that children also receive effective relief from allergy symptoms.

In addition to single-agent formulations, there are also a few combination products available – most notably those that combine loratadine with pseudoephedrine. These are particularly useful in managing allergic rhinitis accompanied by nasal congestion. While not as widely used as monotherapy options, such combinations offer targeted relief for patients with more complex symptom profiles.

Overall, the Moroccan market for loratadine is well-developed, offering a comprehensive range of therapeutic options. The coexistence of internationally branded products and locally manufactured generics ensures a balance between quality and affordability.

This variety supports adherence by allowing pharmacists to recommend the most appropriate formulations based on clinical needs, financial constraints, and individual preferences.

The extensive availability of loratadine in different forms underscores its significance in allergy treatment and highlights the essential role pharmacists play in guiding product selection and promoting the rational use of medications within Moroccan community pharmacy settings.

Our research analyzed the market of loratadine-containing medicines in Morocco. The results are presented in Table 3.2.

Table 3.2

Market analysis of loratadine-containing medicines in Morocco

Dosage Form	Trade Name	Active Ingredient	Manufacturer / Distributor	Availability	Notes
Tablets (10 mg)	Claritine	Loratadine	Bayer	Widely available	Branded original; widely prescribed
Tablets (10 mg)	Loratadine Asafar	Loratadine	Asafar Pharma (Morocco)	Available	Generic; local production
Tablets (10 mg)	Loratin	Loratadine	Neutral Pharma	Available in pharmacies	Generic; affordable option
Tablets (10 mg)	Clara	Loratadine	Jamjoom Pharma	Common in private sector	Popular alternative brand
Tablets (10 mg)	Lorine	Loratadine	SPIMACO (Saudi Arabia)	Moderate availability	Imported generic; moderate cost
Tablets (10 mg)	Loratad	Loratadine	Dar Al Dawa	Limited availability	Regional distributor
Syrup (5 mg/ 5 ml)	Loratadine Syrup	Loratadine	Asafar Pharma (Morocco)	Available	Pediatric use
Syrup (5 mg/5 ml)	New Loratadine	Loratadine	Barakat Pharma	Available	Targeted for children; flavored
Combo Tablets	Loratadine + PSE	Loratadine + Pseudoephedrine	Neutral Pharma	Limited availability	Used for allergic rhinitis with congestion

Allergic rhinitis is a prevalent immunological disorder marked by inflammation of the nasal mucosa following exposure to allergens. It is associated with a variety of clinical symptoms, which differ in intensity and frequency from person to person.

As shown in the accompanying chart, rhinorrhea (runny nose) is the most commonly reported symptom, affecting nearly 50% of individuals diagnosed with allergic rhinitis. This symptom arises from increased mucus secretion triggered by the immune system's response to allergens (Fig. 3.1).

Allergic conjunctivitis, characterized by red, itchy, and watery eyes, occurs in approximately 20% of cases. Often appearing alongside rhinitis, it reflects a more systemic allergic reaction involving both nasal and ocular tissues.

Another notable symptom is pharyngitis (sore throat), reported by 30% of patients. This is frequently caused by postnasal drip, in which excess mucus flows down the back of the throat, leading to irritation and discomfort.

Recognizing the prevalence and pattern of these symptoms is crucial for the accurate diagnosis and effective treatment of allergic rhinitis. This is particularly important in the context of pharmaceutical care, where pharmacists play a vital role in guiding symptom-based management and patient education.

The following graph (Fig.3.2) illustrates the primary factors that influence patient adherence when selecting symptomatic medications for allergic rhinitis. Adherence to treatment is essential to achieve optimal symptom control and improve quality of life.

Based on the data, the dosage form is the most significant factor (30%), emphasizing that patients tend to favor options that are easy and convenient to use. For example, individuals often choose tablets or syrups depending on personal preferences and the intensity of their symptoms.

The medication’s effectiveness comes next (25%), suggesting that patients are more likely to follow treatment plans when they believe the medication offers quick and dependable symptom relief.

Additional key factors include the side effect profile (15%), medication cost

(10%), dosing frequency (10%), and guidance from healthcare professionals (10%). Together, these elements significantly influence patient decisions and adherence to treatment.

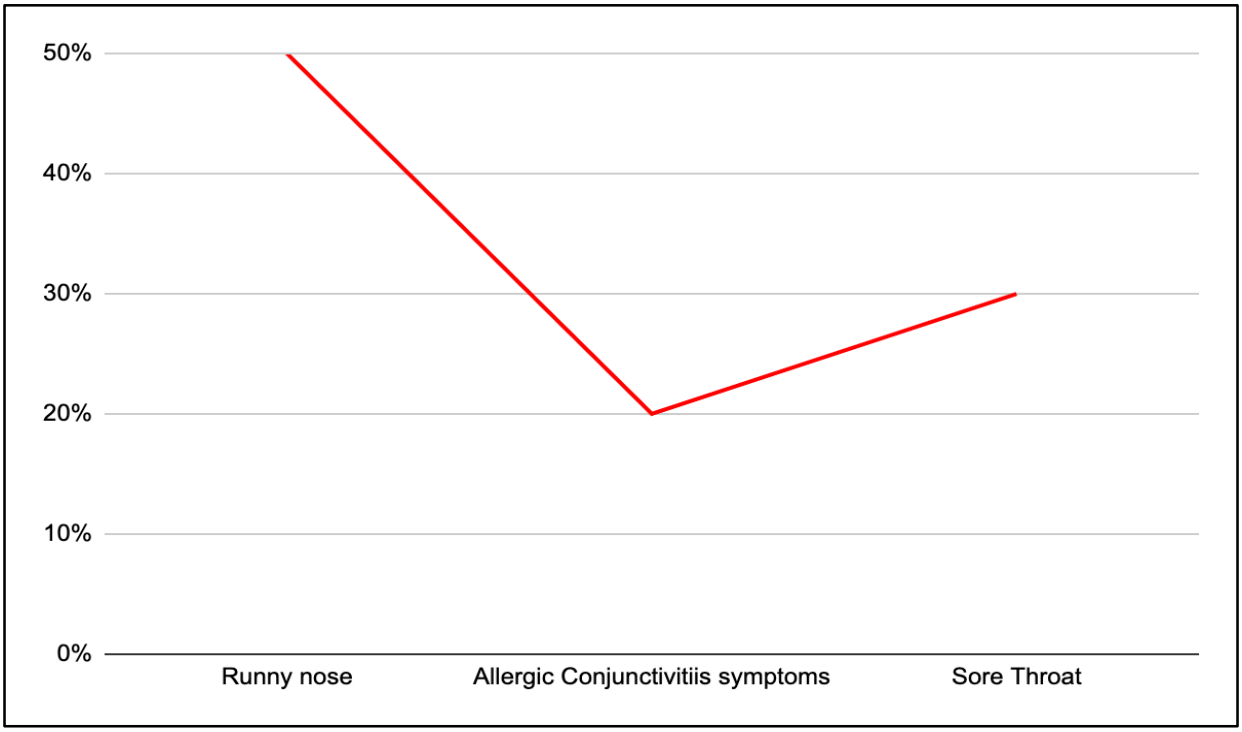

Fig.3.1. Manifestations of allergic rhinitis

Recognizing these preferences is essential for pharmacists and healthcare providers to support patients in making suitable therapeutic decisions and improving adherence and treatment outcomes.

Characteristics of allergic rhinitis patients according to loratadine medication usage are presented in Table 3.3.

This study found that patients with allergic rhinitis most commonly used loratadine twice a day (70%), followed by once a day (20%), and as needed (10%). The average duration of loratadine use was 3 months.

The following graph (Fig. 3.3) shows the adherence levels to loratadine therapy among the surveyed pharmacy visitors. The adherence levels were categorized into three groups: good adherence (40%), intermediate adherence (30%), and poor adherence (30%).

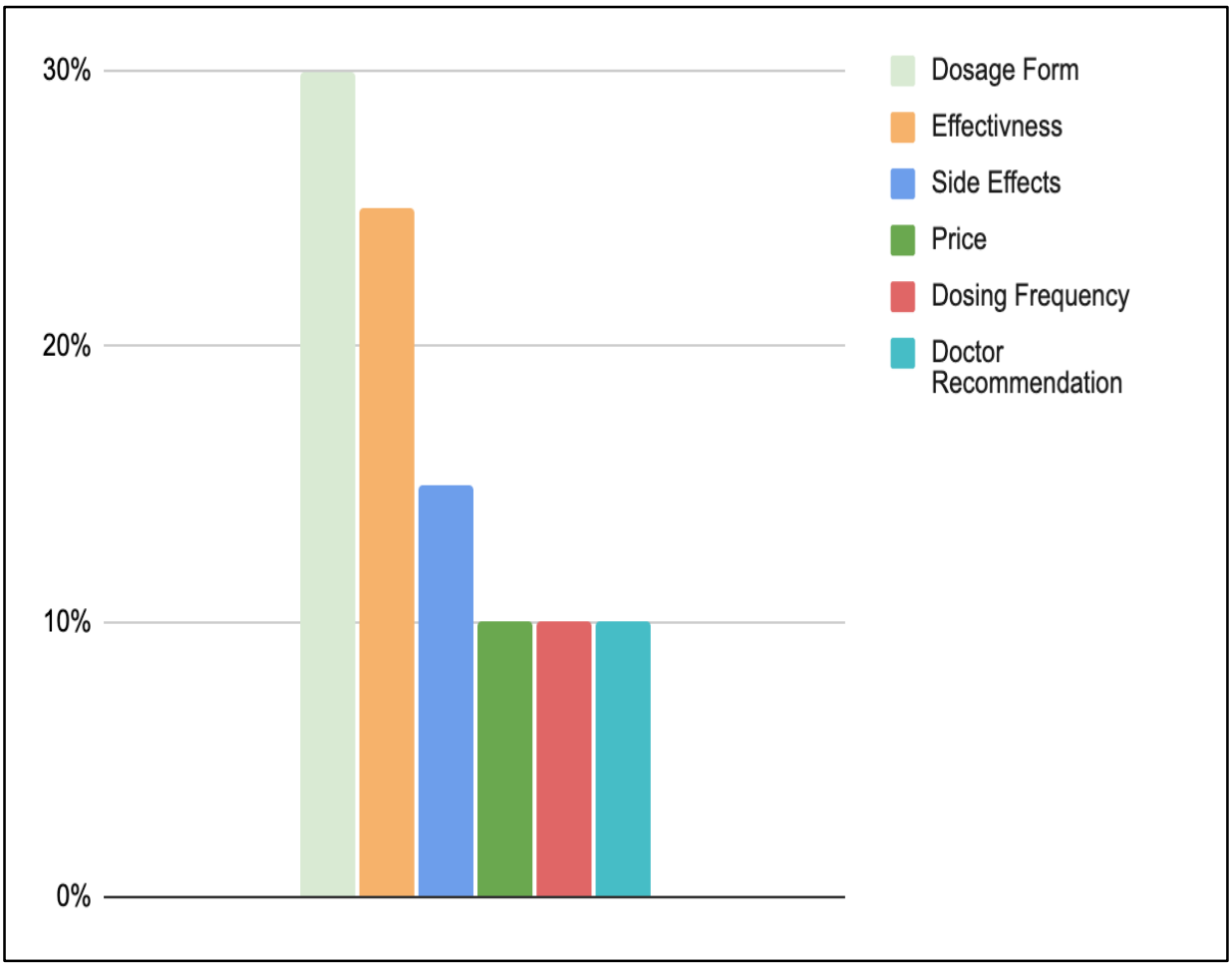

Fig.3.2. Factors influencing patient adherence in choosing allergic rhinitis medication

Successful management of allergic rhinitis with loratadine is not only dependent on choosing the right medication but also on the accurate use of the medication. As part of our survey, we asked respondents to rate their experience with the medication's effectiveness. A majority of the respondents (70%) reported good results with loratadine, particularly in alleviating symptoms such as sneezing, nasal congestion, and itching.

When we assessed the level of adherence based on the frequency of administration (Fig. 3.4), the highest adherence was seen in patients who took loratadine twice a day, while patients who used it once a day had a slightly lower adherence rate.

Pharmacy visitors were also asked about their preferences regarding the form of loratadine medication (e.g., tablets, syrups, or dissolvable forms). The results are shown in Fig. 3.5. The majority (60%) preferred loratadine in tablet form, while 30% preferred the syrup form, and 10% used dissolvable tablets.

Table 3.3

Patients with Allergic Rhinitis According to Loratadine Medication Usage

Frequency of loratadine usage		
Once	15	30%
Twice	25	50%
As need	10	20%
Onset of action of loratadine		
30 min	10	20%
1 hour	25	50,5%
2 hour	15	30%
Form of loratadine medication		
Tablet	30	60%
Syrup	10	20,5%
Dissolvable	10	20,5%
Type of loratadin drug		
Plain loratadine	40	80%
Loratadin with decongestant	10	20%
Adherence to treatment		
Good adherence	20	40%
Intermediate adherence	15	30%
Poor adherence	15	30%

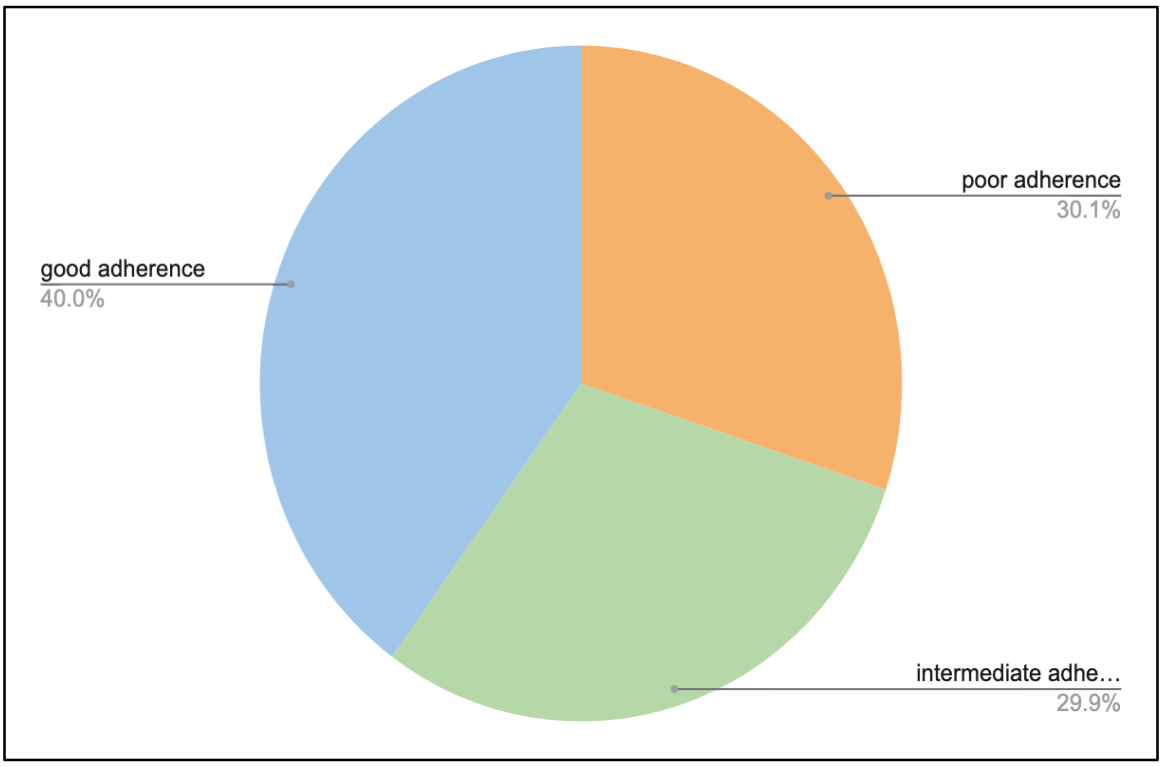

Fig. 3.3. Adherence level in allergic rhinitis patients using loratadine

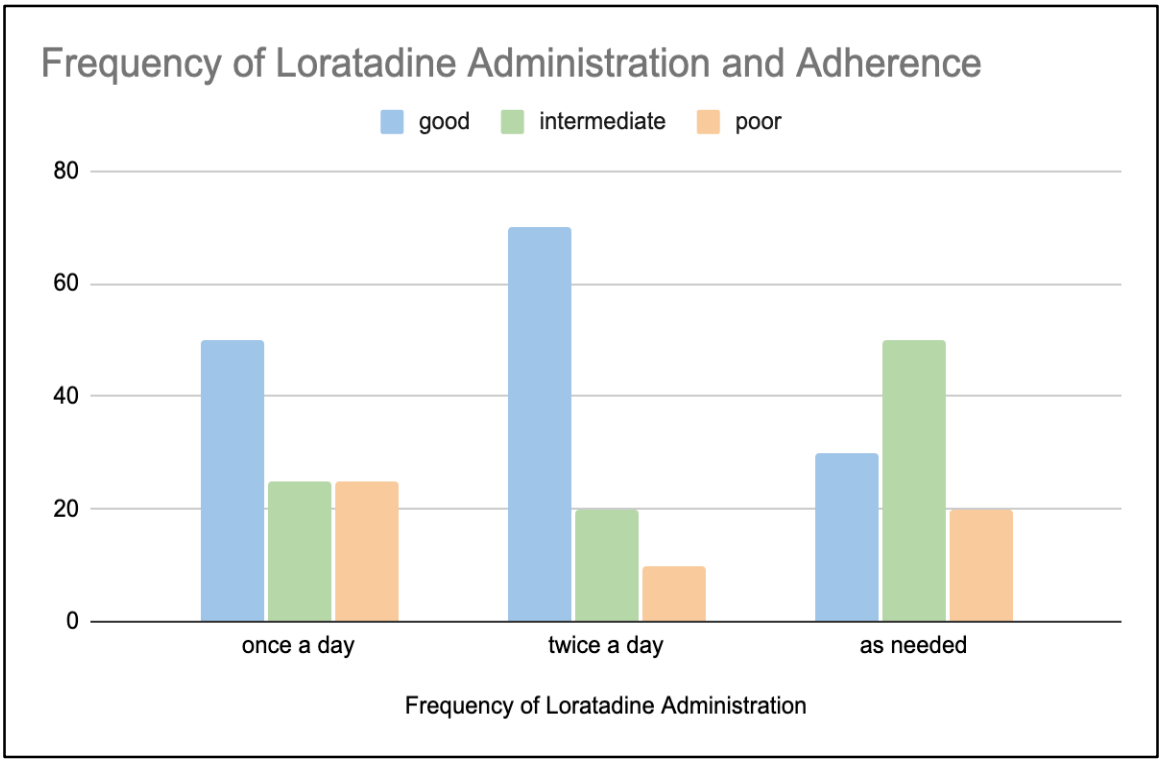

Fig. 3.4. Frequency of loratadine administration and adherence

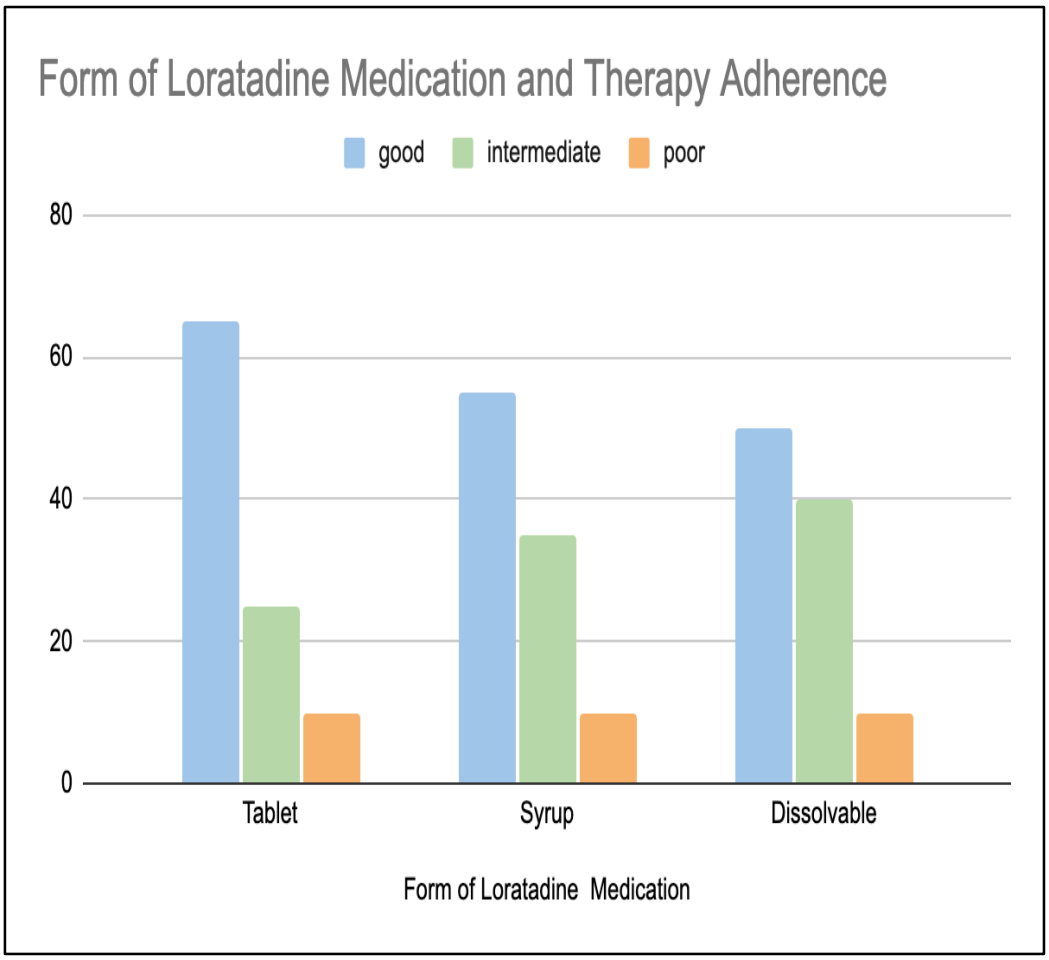

Fig. 3.5. Form of loratadine medication and therapy adherence

Factors Influencing Patient Adherence to Allergic Rhinitis Treatment

Adherence to treatment plays a vital role in the successful management of allergic rhinitis (AR). Although effective medications are available, many patients do not follow their prescribed treatment plans, resulting in less-than-optimal health outcomes. Multiple interconnected factors contribute to adherence behavior, and recognizing these is key to enhancing patient education, counseling approaches, and overall management strategies.

A major contributor to poor adherence is the lack of awareness or understanding that allergic rhinitis is a chronic condition requiring consistent and often prolonged treatment. Many individuals perceive AR as a temporary or minor problem and tend to seek treatment only when symptoms worsen. This misconception is often reinforced by the belief that medications are ineffective,

especially if symptom relief is not immediate or complete.

The following table (Table 3.4) shows the criteria for evaluating the effectiveness of treatment in allergic rhinitis. It categorizes the assessment into three key areas:

- Clinical Criteria: These involve observable improvements in symptoms (such as nasal congestion, sneezing, and rhinorrhea) and overall quality of life, based on patient-reported outcomes and clinical observations. It also includes a reduction in the frequency of allergic episodes and the use of rescue medications.

Table 3.4

Allergic rhinitis: treatment efficacy criteria

Clinical Criteria	Laboratory Criteria	Instrumental Criteria
Reduction in nasal symptoms (sneezing, congestion, rhinorrhea)	Decrease in serum total IgE levels	Improved nasal airflow (via rhinomanometry)
Improvement in sleep quality and daily functioning	Reduction in blood or nasal eosinophil counts	Increased peak nasal inspiratory flow (PNIF)
Fewer allergic episodes or symptom exacerbations	Decrease in inflammatory cytokines (e.g., IL-4, IL-5)	Acoustic rhinometry showing increased nasal volume
Decreased use of antihistamines or corticosteroids	Changes in allergen-specific IgE titers post-immunotherapy	Endoscopic evidence of reduced nasal mucosal inflammation
Patient-reported satisfaction and symptom relief	Increased regulatory T-cell activity (in immunotherapy patients)	CT scan showing reduced sinus or nasal cavity inflammation

- Laboratory Criteria: These include objective measurements at a biological level, such as a decrease in serum total IgE levels, reduction in eosinophil count, and changes in inflammatory markers like IL-4 and IL-5. These markers reflect the

immune response and inflammation associated with allergic rhinitis.

- Instrumental Criteria: These include objective diagnostic tests that assess physical and functional changes in the nasal passages, such as improvements in nasal airflow (measured through rhinomanometry or peak nasal inspiratory flow), enhanced sinus health seen in CT scans, and nasal mucosal healing confirmed through endoscopy.

By using this information healthcare provider can comprehensively assess the effectiveness of treatments for allergic rhinitis, ensuring both symptomatic relief and underlying immune modulation are addressed.

The following graph (Fig 3.36) shows among the 30 pharmacy visitors who reported using loratadine for allergic rhinitis.

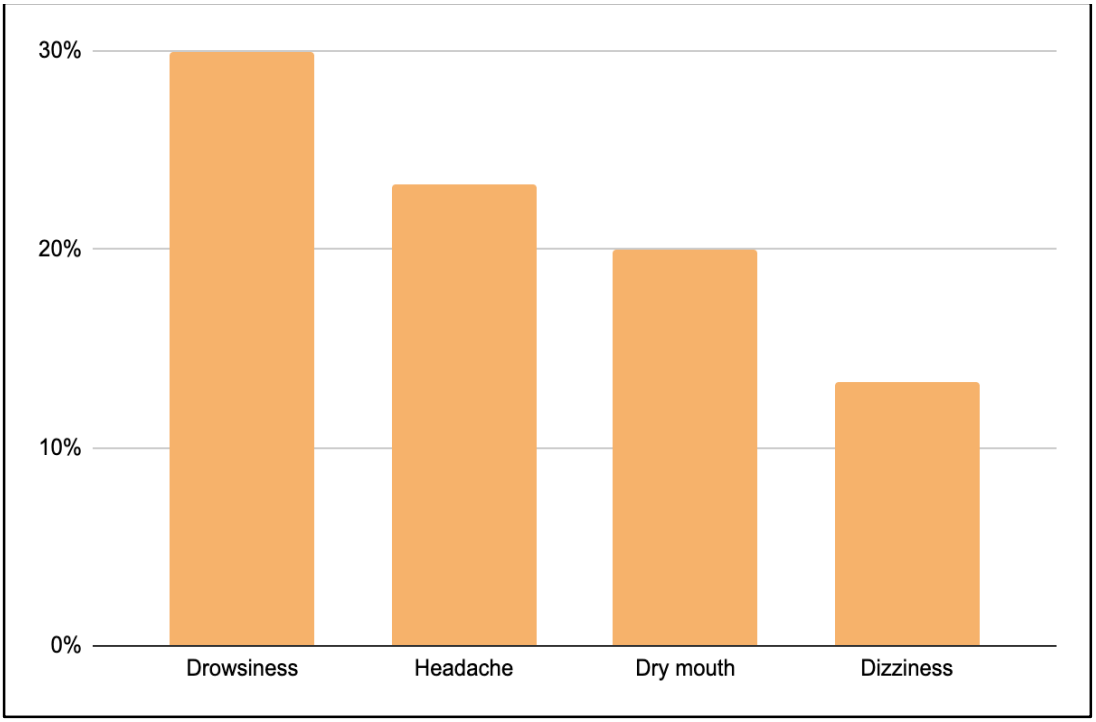

Fig 3.6. Most common side effects of loratadine (n =30)

The most frequently observed adverse effect was drowsiness, experienced by 30 % of patients. Headache was the second most common complaint (23.3 %), followed by dry mouth (20 %) and dizziness (13.3 %). These data suggest that, although loratadine is generally classified as a non-sedating antihistamine, a

substantial minority of patients may still experience central nervous system–related side effects. Recognizing the relative frequencies of these reactions can help pharmacists counsel patients more effectively on what to expect and manage any symptoms that arise during treatment.

Recommendations to Improve the Effectiveness and Safety of Loratadine Use: Guidance for Pharmacists Assisting Pharmacy Visitors

Loratadine is a well-established, effective, and safe medication used to relieve the symptoms of allergic rhinitis and to treat urticaria. As it is available over the counter, pharmacists play a crucial role in guiding patients regarding its appropriate use. This includes educating patients on the correct therapeutic dosage and reviewing their medication profiles to identify any potential drug interactions.

Primary care providers – including physicians (MD, DO), physician assistants (PA), and nurse practitioners (NP) – should counsel patients on the importance of reading product labels to prevent unintentional overdosing and related toxicities. While loratadine is generally well tolerated, healthcare providers must ensure that patients are fully informed about all possible side effects. Medication reconciliation is also essential when starting or discontinuing any drug to prevent adverse interactions.

For patients with hepatic or renal impairments, it is necessary to assess liver and kidney function before initiating loratadine therapy to avoid potential complications.

Nurses should obtain a comprehensive medication history at every patient visit, including all over-the-counter products and dietary supplements. This information should be clearly documented to ensure that all members of the healthcare team are fully informed. Nurses can further support patient care by reinforcing counseling on proper dosing, administration, monitoring for side effects, and encouraging adherence to treatment.

Pharmacists can reinforce these efforts by providing clear guidance on

dosing schedules, checking for possible drug-drug interactions, and addressing any concerns raised by the patient [18, 24, 25, 29, 32].

Effective communication and collaboration among all members of the interprofessional healthcare team are vital to achieving optimal treatment outcomes and ensuring the safe and effective use of loratadine.

A doctor should be consulted if the symptoms of allergic rhinitis disrupt the patient's sleep, interfere with daily activities, or negatively affect work or school. According to the Pharmacist's Protocol for the Dispensing of Nonprescription Medicines “Symptomatic Treatment of Allergies”, a pharmacist should refer a patient to a doctor in the event of:

1) development of severe shortness of breath, difficulty breathing, nervous system disorders, a sharp drop in blood pressure, or an attack of suffocation

2) signs of laryngeal edema: hoarse voice, “barking” cough, difficulty breathing;

3) swelling spreads to the upper half of the face;

4) severe anxiety, fear, severe weakness, increased motor activity;

5) abdominal syndrome – nausea, vomiting, abdominal pain of varying intensity;

6) bloody or purulent nasal discharge or fever;

7) persistence of allergy symptoms during treatment with previously prescribed medications or the emergence of new allergy symptoms, or their recurrence.

In addition, allergic rhinitis also often affects women during pregnancy, especially those who had the disease before hormonal changes. The clinical picture during pregnancy does not differ from the typical signs. However, if it is necessary to use medications used for allergies, you should consult a gynecologist to choose those that are allowed during gestation.

The diagnosis of allergic rhinitis is usually based on symptoms. If the cause of this pathological condition is unknown, the patient may be recommended to undergo allergy testing.

3.2. Discussion of the obtained results

Allergic rhinitis (AR) is an inflammatory process of the nasal mucosa, usually mediated by elevated IgE levels and caused by environmental allergens (plant pollen and house dust mite allergens). The disease is characterized by the presence of inflammatory cells in the mucous membrane and submucosa of the nose. The course of the disease is accompanied by the appearance of one or more symptoms that persist for at least one hour or two days and resolve spontaneously or after treatment. Symptoms include nasal discharge, itchy nose, sneezing, and nasal obstruction. The disease remains a serious public health problem in a number of countries, including Poland, where about 9 million people have been diagnosed with various forms of AR, so it is important to ensure timely and correct diagnosis and proper patient management based on the latest international and national guidelines.

Over the years, there have been attempts to systematize different forms of AR based on a number of criteria. Current classifications of AR take into account the following criteria:

- symptoms caused by allergens (an etiologic classification that has long been used by clinicians; especially popular in the United States).
- duration of symptoms (a clinical classification that is easy to implement in practice).
- severity of the clinical course (clinical classification).
- pathophysiology of the disease (pathophysiological classification with limited use in clinical practice).

The experimental component of the master thesis has been carried out at the pharmacy Al Ikhwa Fez, Morocco. In this study, there were 50 pharmacy visitors, having allergic rhinitis, for the survey. A questionnaire was prepared containing general and specific questions about allergic rhinitis control, adherence to treatment, and quality of life. Secondary outcomes included measures of efficacy

and safety, specific to patients with allergic rhinitis. Eligibility criteria included a confirmed diagnosis of allergic rhinitis, current or prior use of loratadine-based medication, and voluntary consent to participate.

Among the 50 surveyed pharmacy visitors, 32 were females (64.0%) and 18 were males (36.0%). The average age of respondents was 41.8, with the youngest respondent being 20 years old and the oldest being 65 years old. 10% of respondents were smokers. All surveyed pharmacy visitors (100%) had experience with loratadine use, either as a current or past medication.

In Morocco, the pharmaceutical market provides a wide array of loratadine-based products, available in multiple dosage forms and under various brand names. This diversity caters to the needs of a broad patient demographic and reflects the growing demand for reliable allergy treatments.

The most commonly available formulation in Moroccan pharmacies is the 10 mg oral tablet, which serves as the standard dosage for adult patients.

Allergic rhinitis is a prevalent immunological disorder marked by inflammation of the nasal mucosa following exposure to allergens. It is associated with a variety of clinical symptoms, which differ in intensity and frequency from person to person. In our study rhinorrhea (runny nose) is the most commonly reported symptom, affecting nearly 50% of individuals diagnosed with allergic rhinitis. Allergic conjunctivitis, characterized by red, itchy, and watery eyes, occurs in approximately 20% of cases. Another notable symptom is pharyngitis (sore throat), reported by 30% of patients.

This study found that patients with allergic rhinitis most commonly used loratadine twice a day (70%), followed by once a day (20%), and as needed (10%). The average duration of loratadine use was 3 months.

We asked respondents to rate their experience with the medication’s effectiveness. A majority of the respondents (70%) reported good results with loratadine, particularly in alleviating symptoms such as sneezing, nasal congestion, and itching. The majority (60%) preferred loratadine in tablet form, while 30% preferred the syrup form, and 10% used dissolvable tablets.

The most frequently observed adverse effect was drowsiness, experienced by 30 % of patients. Headache was the second most common complaint (23.3 %), followed by dry mouth (20 %) and dizziness (13.3 %). These data suggest that, although loratadine is generally classified as a non-sedating antihistamine, a substantial minority of patients may still experience central nervous system–related side effects. Recognizing the relative frequencies of these reactions can help pharmacists counsel patients more effectively on what to expect and manage any symptoms that arise during treatment.

Adherence to treatment is essential to achieve optimal symptom control and improve quality of life.

Based on the data, the dosage form is the most significant factor (30%), emphasizing that patients tend to favor options that are easy and convenient to use. For example, individuals often choose tablets or syrups depending on personal preferences and the intensity of their symptoms.

The medication's effectiveness comes next (25%), suggesting that patients are more likely to follow treatment plans when they believe the medication offers quick and dependable symptom relief.

Additional key factors include the side effect profile (15%), medication cost (10%), dosing frequency (10%), and guidance from healthcare professionals (10%). Together, these elements significantly influence patient decisions and adherence to treatment.

3.3 Practical recommendations for rational use of medicines for allergic rhinitis treatment

Allergic rhinitis is a prevalent and chronic condition that can significantly impair patients' quality of life, work productivity, and overall well-being. Effective AR management depends on the rational use of medications – ensuring that treatments are safe, effective, accessible, and used appropriately. In Moroccan pharmacy settings, where loratadine-based medications are widely available,

pharmacists play a pivotal role in guiding appropriate drug selection, educating patients, and supporting treatment adherence.

Promoting the rational use of medications is essential not only for symptom control but also for minimizing adverse effects and improving long-term outcomes. Patient education on medication use and treatment principles is a cornerstone of successful AR management.

Key Recommendations for Rational Use of Medicines in Allergic Rhinitis

1. Components of Successful Allergic Rhinitis Management:

- Helping patients understand and accept AR as a chronic condition requiring consistent treatment.
- Ensuring medications are used correctly and consistently as prescribed.
- Monitoring symptoms and side effects regularly.
- Following specific usage guidelines for different medication forms (e.g., antihistamines, nasal sprays, decongestants).

2. Common Medications for Allergic Rhinitis:

- *Antihistamines:*

  First-line treatment for mild to moderate AR. Oral antihistamines like loratadine are typically taken once daily and effectively manage sneezing, itching, and rhinorrhea. Patients should avoid overuse of sedating (first-generation) antihistamines due to their drowsiness-inducing effects.

- *Intranasal Corticosteroids:*
- Most effective for moderate to severe AR. These should be used regularly – even when symptoms are absent – for sustained control. Pharmacists should instruct patients on proper spray technique, such as aiming away from the nasal septum, to prevent irritation and ensure effectiveness.

- *Decongestants:*

  Suitable for short-term relief of nasal congestion. Intranasal decongestants should not be used for more than 3–5 days to avoid rebound congestion (*rhinitis medicamentosa*). Oral decongestants must be used with caution, particularly in patients with hypertension or cardiovascular issues.

- *Leukotriene Receptor Antagonists (e.g., Montelukast):*
- Recommended for patients with poor response to antihistamines or corticosteroids, especially if asthma coexists.

3. Proper Medication Use Guidelines:

- *Nasal Sprays:*
- Instruct patients to shake the bottle before use, tilt the head slightly forward, and spray while inhaling gently. Strong sniffing post-application should be avoided to ensure proper absorption.
- *Oral Antihistamines:*
- Advise patients to take them at the same time each day to maintain consistent levels and aid memory. Discuss common side effects such as drowsiness, especially with older antihistamines.
- *Allergen-Specific Immunotherapy:*
- For patients with persistent or severe symptoms, allergy shots or sublingual tablets may be beneficial. Emphasize the importance of consistent treatment and follow-up appointments.

4. Lifestyle Modifications:

Alongside pharmacological treatment, recommend allergen-avoidance strategies:

- Stay indoors during high pollen periods.
- Use air purifiers and keep windows closed.
- Wash bedding regularly and wear sunglasses outdoors to minimize pollen exposure.

5. When to Seek Medical Attention:

Patients should consult their healthcare provider if:

- Symptoms persist or worsen despite treatment.
- Side effects occur or interfere with daily activities.
- There are signs of secondary infections (e.g., sinusitis).

Immediate medical care is necessary if patients experience symptoms of a severe allergic reaction, such as difficulty breathing or swelling of the face or

throat.

Optimal management of allergic rhinitis involves a comprehensive approach that combines appropriate medication use, lifestyle changes, and patient education. Pharmacists are essential in ensuring rational medication use by educating patients, reinforcing correct usage techniques, and promoting adherence. Regular consultations and follow-up are key to maintaining effective treatment and enhancing patients' quality of life.

Conclusions for chapter 3

1. The survey conducted among Moroccan pharmacy visitors highlights the critical role of pharmacists in managing allergic rhinitis, particularly in ensuring adherence to loratadine-based therapies. The findings suggest that loratadine is an effective treatment for allergic rhinitis, with a significant portion of respondents reporting symptom relief. However, adherence to the prescribed regimen remains a challenge, with barriers such as forgetfulness, perceived ineffectiveness, and insufficient counseling identified as key factors influencing patient behavior.

2. this study provides valuable insights into the management of allergic rhinitis among Moroccan pharmacy visitors, focusing on the use of loratadine as a treatment option. The findings demonstrate that loratadine is an effective, non-sedative antihistamine that offers significant. While loratadine is an effective first-line treatment for many patients with allergic rhinitis, it should be part of a comprehensive management plan that includes environmental control measures and, when necessary, additional pharmacologic treatments. symptom relief for many patients with AR.

3. The rational use of medicines in the management of allergic rhinitis (AR) is essential to provide effective symptom relief, improve patient quality of life, and minimize the risk of adverse effects. Pharmacists, as primary healthcare providers in community pharmacy settings, play a vital role in ensuring that patients with allergic rhinitis are appropriately educated on medication use, adherence, and lifestyle modifications. The recommendations provided emphasize the importance of correct medication usage, patient education, and monitoring for side effects. It is essential to tailor treatment regimens based on the severity of the disease and to offer patients the appropriate tools to manage their symptoms effectively.

CONCLUSIONS

1. Allergic rhinitis is a common disease in many countries, affecting 10-20% of the general population. Statistics show that the incidence of allergic rhinitis continues to grow. Antihistamines are the standard treatment for allergic rhinitis. Loratadine, a widely utilized second-generation antihistamine, plays a central role in the treatment of allergic rhinitis due to its proven effectiveness and safety. In Morocco, the pharmaceutical market provides a wide array of loratadine-based products, available in multiple dosage forms and under various brand names.

2. Among the 50 surveyed pharmacy visitors with allergic rhinitis the most commonly reported symptoms were runny nose (nearly 50% of individuals), allergic conjunctivitis (occurs in approximately 20% of cases) and pharyngitis (sore throat), reported by 30% of patients.

3. This study found that patients with allergic rhinitis most commonly used loratadine twice a day (70%), followed by once a day (20%), and as needed (10%). The average duration of loratadine use was 3 months. A majority of the respondents (70%) reported good results with loratadine, particularly in alleviating symptoms such as sneezing, nasal congestion, and itching. The majority (60%) preferred loratadine in tablet form, while 30% preferred the syrup form, and 10% used dissolvable tablets. The most frequently observed adverse effects were drowsiness (30 % of patients), headache (23.3 %), dry mouth (20 %) and dizziness (13.3 %).

4. Adherence to treatment is essential to achieve optimal symptom control and improve quality of life. Based on the data, the dosage form is the most significant factor (30%). The medication’s effectiveness comes next (25%), suggesting that patients are more likely to follow treatment plans when they believe the medication offers quick and dependable symptom relief. Additional key factors include the side effect profile (15%), medication cost (10%), dosing frequency (10%), and guidance from healthcare professionals (10%). Together, these elements significantly influence patient decisions and adherence to treatment.

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Ф А 2.2.1–32-366

National University of Pharmacy

Faculty pharmaceutical
Department of clinical pharmacology and clinical pharmacy

Level of higher education master

Specialty 226 Pharmacy, industrial pharmacy
Educational and professional program Pharmacy

APPROVED
Head of Department
of Pharmacology and
Clinical Pharmacy

_____

Sergii SHTRYGOL`
«02» of September 2024

ASSIGNMENT
FOR QUALIFICATION WORK
OF AN APPLICANT FOR HIGHER EDUCATION

Salma BENABBOU

1. Topic of qualification work: «The role of the pharmacist in ensuring the appropriate level of pharmaceutical care in the use of loratadine-based medicines in Moroccan pharmacy visitors with allergic rhinitis», supervisor of qualification work: Inna OTRISHKO, PhD, assoc. prof.

approved by order of NUPh from «27th» of September_2024 № 237

2. Deadline for submission of qualification work by the applicant for higher education: May 2025

3. Outgoing data for qualification work: allergic rhinitis, loratadine-based medicines, efficacy and safety of therapy, pharmacist, Moroccan patients.

4. Contents of the settlement and explanatory note (list of questions that need to be developed):
to study the basic information about allergic rhinitis, including its causes, symptoms, prevalence, and impact on patients' quality of life; to examine modern approaches to the pharmacological treatment of allergic rhinitis, with a focus on loratadine-based therapy and analyze the role of pharmacists in ensuring proper pharmaceutical care for Moroccan pharmacy visitors suffering from allergic rhinitis; to assess the level of medication adherence among Moroccan patients using loratadine-based medications for allergic rhinitis treatment and to evaluate the opinions and beliefs of Moroccan pharmacy visitors regarding the efficacy and safety of allergic rhinitis medications; to develop practical recommendations for pharmacists to improve counseling strategies and optimize the rational use of medicines for allergic rhinitis management.

5. List of graphic material (with exact indication of the required drawings):
tables – 6, figures – 7.

6. Consultants of chapters of qualification work

Chapters	Name, SURNAME, position of consultant	Signature, date	
		assignment was issued	assignment was received
1.	Inna OTRISHKO, associate professor of higher education institution of pharmacology and clinical pharmacy department	30.09.2024	30.09.2024
2.	Inna OTRISHKO, associate professor of higher education institution of pharmacology and clinical pharmacy department	30.09.2024	30.09.2024
3.	Inna OTRISHKO, associate professor of higher education institution of pharmacology and clinical pharmacy department	30.09.2024	30.09.2024

7. Date of issue of the assignment: «30» September 2024

CALENDAR PLAN

№ з/п	Name of stages of qualification work	Deadline for the stages of qualification work	Notes
1.	Conducting a literature review on the issues of the work.	September-October 2024	**done**
2.	Conducting a survey of pharmacy visitors.	November-December 2024	**done**
3.	Experimental data processing.	January-February 2025	**done**
4.	Writing the qualification work.	Mach-April 2025	**done**
5.	Registration of the work and accompanying documents and submission to the Examination Committee of the NUPh.	May 2025	**done**

An applicant of higher education _____ Salma BENABBOU

Supervisor of qualification work _____ Inna OTRISHKO

ВИТЯГ З НАКАЗУ № 237

По Національному фармацевтичному університету

від 27 вересня 2024 року

Затвердити теми кваліфікаційних робіт здобувачам вищої освіти 5-го курсу Фм20(4.10д) 2024-2025 навчального року, освітньо-професійної програми – Фармація, другого (магістерського) рівня вищої освіти, спеціальності 226 – Фармація, промислова фармація, галузь знань 22 Охорона здоров'я, денна форма здобуття освіти (термін навчання 4 роки 10 місяців), які навчаються за контрактом (мова навчання англійська та українська) згідно з додатком № 1.

Прізвище, ім'я здобувача вищої освіти	Тема кваліфікаційної роботи		Посада, прізвище та ініціали керівника	Рецензент кваліфікаційної роботи
по кафедрі фармакології та клінічної фармації				
Бенаббу Салма	Роль фармацевта в забезпеченні належного рівня фармацевтичної допомоги при застосуванні лікарських засобів на основі лоратадину у марокканських відвідувачів аптек з алергічним ринітом	The role of the pharmacist in ensuring the appropriate level of pharmaceutical care in the use of loratadine-based medicines in Moroccan pharmacy visitors with allergic rhinitis	доцент Отрішко І.А.	професор Бутко Я.О.

Національний фармацевтичний університет Факультет з підготовки іноземних громадян №02010936

Ректор

Вірно. Секретар

ФА2.8-03-317

ВИСНОВОК

експертної комісії про проведену експертизу
щодо академічного плагіату у кваліфікаційній роботі

здобувача вищої освіти

«02» травня 2025 р. № 331104258

Проаналізувавши кваліфікаційну роботу здобувача вищої освіти Бенаббу Салма, групи Фм20(4.10) англ-03, спеціальності 226 Фармація, промислова фармація, освітньої програми «Фармація» навчання на тему: «Роль фармацевта в забезпеченні належного рівня фармацевтичної допомоги при застосуванні лікарських засобів на основі лоратадину у марокканських відвідувачів аптек з алергічним ринітом / The role of the pharmacist in ensuring the appropriate level of pharmaceutical care in the use of loratadine-based medicines in Moroccan pharmacy visitors with allergic rhinitis», експертна комісія дійшла висновку, що робота, представлена до Екзаменаційної комісії для захисту, виконана самостійно і не містить елементів академічного плагіату (компіляції).

Голова комісії,
проректор ЗВО з НПР,
професор **Інна ВЛАДИМИРОВА**

Ф А 2.2.1-32-353

REVIEW

of scientific supervisor for the qualification work of the master's level of higher education of the specialty 226 Pharmacy, industrial pharmacy

Salma BENABBOU

on the topic: «The role of the pharmacist in ensuring the appropriate level of pharmaceutical care in the use of loratadine-based medicines in Moroccan pharmacy visitors with allergic rhinitis»

Relevance of the topic. Allergic rhinitis (AR) is a common and long-lasting allergic condition that has a considerable impact on individuals' health and quality of life across the globe. The rising incidence of AR, particularly in developing nations, is driven by various factors, including environmental pollution, changes in climate, and urban development.

Practical value of conclusions, recommendations and their validity. The research conducted in this work is the basis for further clinical and pharmaceutical studies, development and implementation of principles for optimizing the use of loratadine-based medicines in Moroccan pharmacy visitors with allergic rhinitis. The implementation of these principles and provisions in practical medicine and pharmacy will help to increase the effectiveness and safety of allergic rhinitis therapy.

Assessment of work. The work is performed at a sufficient scientific and methodological level. In terms of relevance, scientific novelty and practical significance, it fully meets the requirements for qualification works.

General conclusion and recommendations on admission to defend. The work is performed in full, designed in accordance with the current requirements for the qualification works at the National University of Pharmacy and can be recommended for submission to the EC for further defense.

Scientific supervisor _____ Inna OTRISHKO

«09» May 2025

Ф А 2.2.1-32-356

REVIEW

for qualification work of the master's level of higher education, specialty 226 Pharmacy, industrial pharmacy

Salma BENABBOU

on the topic: «The role of the pharmacist in ensuring the appropriate level of pharmaceutical care in the use of loratadine-based medicines in Moroccan pharmacy visitors with allergic rhinitis»

Relevance of the topic. Allergic rhinitis is an inflammation of the inside of the nose caused by an allergen. It is a very common disease that affects about 20% of people. Currently, there is more and more information about the growing incidence of allergic rhinitis.

Theoretical level of work. The literature review conducted on the subject of the study illustrates the state of pharmaceutical care of patients today and outlines the prospects for research in this area.

Author's suggestions on the research topic. The provisions of the author of the work on pharmaceutical care are of practical importance for the modern health care system.

Practical value of conclusions, recommendations and their validity. According to the results of research, approaches to the rational use of loratadine-based medicines have been developed. The author discusses the main approaches to increase the medication adherence in case of allergic rhinitis therapy. Practical recommendations for all healthcare providers are proposed.

Disadvantages of work. Single grammatical and spelling errors do not affect the overall positive assessment of the work.

General conclusion and assessment of the work. The work meets the requirements for qualification work in NUPh and can be recommended for defense.

Reviewer _____ prof. Yaroslava BUTKO

«14» May 2025

Ф А2.2.1-38-287

МІНІСТЕРСТВО ОХОРОНИ ЗДОРОВ'Я УКРАЇНИ
НАЦІОНАЛЬНИЙ ФАРМАЦЕВТИЧНИЙ УНІВЕРСИТЕТ
ВИТЯГ З ПРОТОКОЛУ № 19
засідання кафедри фармакології та клінічної фармації

15 травня 2025 р. м. Харків

Голова: завідувач кафедри, доктор мед. наук, професор Штриголь С. Ю.
Секретар: кандидат фарм. наук, доцент Вєтрова К. В.

ПРИСУТНІ: зав. каф., проф. Штриголь С.Ю., проф. Деримедвідь Л.В., доц. Бєлік Г.В., доц. Вєтрова К.В., доц. Жаботинська Н.В., доц. Кононенко А. В., доц. Матвійчук А.В., доц. Отрішко І.А., доц. Очкур О.В., доц. Рябова О.О., доц. Савохіна М.В., доц. Степанова С. І., доц. Таран А.В., ас. Верховодова Ю.В., ас. Підгайна В.В. та здобувачі вищої освіти.

ПОРЯДОК ДЕННИЙ:
1.Розгляд кваліфікаційних робіт здобувачів вищої освіти для подання робіт до Екзаменаційної комісії.

СЛУХАЛИ:
1.Здобувачку вищої освіти Бенаббу Салму зі звітом про проведену наукову діяльність за темою кваліфікаційної роботи: «Роль фармацевта в забезпеченні належного рівня фармацевтичної допомоги при застосуванні лікарських засобів на основі лоратадину у марокканських відвідувачів аптек з алергічним ринітом» («The role of the pharmacist in ensuring the appropriate level of pharmaceutical care in the use of loratadine-based medicines in Moroccan pharmacy visitors with allergic rhinitis»).

УХВАЛИЛИ:
1. Кваліфікаційну роботу розглянуто. Здобувачка вищої освіти Бенаббу Салма допускається до захисту даної кваліфікаційної роботи в Екзаменаційній комісії.

Голова
Завідувач кафедри, проф. Штриголь С. Ю.

Секретар, доц. Вєтрова К. В.

Ф А2.2.1-32-042

НАЦІОНАЛЬНИЙ ФАРМАЦЕВТИЧНИЙ УНІВЕРСИТЕТ

ПОДАННЯ
ГОЛОВІ ЕКЗАМЕНАЦІЙНОЇ КОМІСІЇ
ЩОДО ЗАХИСТУ КВАЛІФІКАЦІЙНОЇ РОБОТИ

Направляється здобувач вищої освіти Салма БЕНАББУ до захисту кваліфікаційної роботи
за галуззю знань 22 Охорона здоров'я
спеціальністю 226 Фармація, промислова фармація
освітньо-професійною програмою Фармація
на тему: «Роль фармацевта в забезпеченні належного рівня фармацевтичної допомоги при застосуванні лікарських засобів на основі лоратадину у марокканських відвідувачів аптек з алергічним ринітом» / «The role of the pharmacist in ensuring the appropriate level of pharmaceutical care in the use of loratadine-based medicines in Moroccan pharmacy visitors with allergic rhinitis».

Кваліфікаційна робота і рецензія додаються.

Декан факультету _____ / Микола ГОЛІК /

Висновок керівника кваліфікаційної роботи

Здобувач вищої освіти Салма БЕНАББУ виконав весь необхідний обсяг робіт. Кваліфікаційна робота може бути рекомендована до подачі в ЕК НФаУ для подальшого її захисту.

Керівник кваліфікаційної роботи

_____ Інна ОТРІШКО

«09» травня 2025 року

Висновок кафедри про кваліфікаційну роботу

Кваліфікаційну роботу розглянуто. Здобувач вищої освіти Салма БЕНАББУ допускається до захисту даної кваліфікаційної роботи в Екзаменаційній комісії.

Завідувач кафедри
фармакології та клінічної фармації Сергій ШТРИГОЛЬ

«15» травня 2025 року

Qualification work was defended
of Examination commission on
«___» June 2025
with the grade _____

Head of the State Examination commission,
DPharmSc, Professor
_____ / Volodymyr YAKOVENKO /