



RESEARCH PAPER

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Assessment of physician knowledge and prescribing practices regarding antihistamine agents in the management of allergic conditions: A survey study in Kyrgyzstan

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Abstract

Antihistamines are a class of drugs commonly used to treat symptoms of allergies. Even over-the-counter allergy medications have side effects, and some allergy medications can cause problems when combined with other medications. Hence the Physician needs to choose the most effective allergy medications and avoid problems. Hence the current study was conducted to assess the knowledge and prescribing practices of physicians regarding antihistamine agents for the management of allergic conditions. A survey-based approach was employed to gather data from physicians across various specialties in Kyrgyzstan. In the current study, 220 doctors were surveyed, among them 80% were women and 20% were men aged from 41 to 66 years, with experience from 21 to 27 years of experience, 95% of which work in government healthcare organizations. Based on the results of a pharmacoepidemiological study on safety and pharmacovigilance, it was found that doctors have a satisfactory level of knowledge on classification, principles of rational and safe use of drugs, taking into account the clinical pharmacokinetics and pharmacodynamics of anti-allergic drugs. However, the information and advisory activities of doctors and the degree of informing patients, as well as warning patients of adverse reactions by doctors, are insufficient.

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Introduction

Antihistamines are a class of drugs commonly used to treat symptoms of allergies. These drugs help treat conditions caused by too much histamine; a chemical created by your body's immune system (Schifano *et al.*, 2021; Linton *et al.*, 2023). Antihistamines are most commonly used by people with allergic reactions to pollen and other allergens (D'Amato *et al.*, 2023). They are also used to treat various conditions such as stomach problems, colds, anxiety, and more. An allergy occurs when your immune system overreacts to the "foreign" substance (Cui and Collins, 2022; Adams, 2024). In the case of an allergy, substances that are usually harmless and don't bother some people, such as dust or animal dander, do bother you! Your body views these substances as "foreign," which then triggers an overreaction by your body's defense system that includes the release of histamine (Uter *et al.*, 2020). The substances that trigger the overreaction are called allergens. The symptoms that result are called an allergic reaction. Allergies are one of the most common chronic conditions in the world (Uppin *et al.*, 2024).

Histamine is an important chemical that has a role in some different bodily processes (Shulpekova *et al.*, 2021). It stimulates gastric acid secretion, plays a role in inflammation, dilates blood vessels, affects muscle contractions in the intestines and lungs, and affects your heart rate (Shulpekova *et al.*, 2021). It also helps transmit messages between nerve cells and helps fluids move through blood vessel walls. Histamine is also released if your body encounters a threat from an allergen. Histamine causes vessels to swell and dilate, leading to allergy symptoms. Doctor chooses the most effective allergy medications and avoids problems (Smolinska *et al.*, 2022). Even over-the-counter allergy medications have side effects, and some allergy medications can cause problems when combined with other medications (Ylä-Rautio *et al.*, 2020). Despite the constant improvement of diagnostic and treatment methods, issues of rational prescription of drugs, taking into account the basic aspects of polypharmacy, remain relevant for clinical practice, requiring the need to use new effective approaches to pharmacological correction of the prescription and use of drugs (Rajula *et al.*, 2020).

The objective of the study was to evaluate the determinants of the use of antihistamines in patients suffering from allergic diseases: the characteristics of those prescribing drugs (general practitioner).

Materials and methods

Study area and subjects

The current study was conducted in different regions of Kyrgyzstan. Data from 220 general practitioners for the period from 2021-2023 were collected. Questionnaires were developed for the relevant target groups healthcare doctors. The questionnaires contained 30 questions of open and closed types with simple and multiple-choice answers.

The developed questionnaires underwent expert evaluation and were approved by the El-Pikir Center for the Study of Public Opinion and Forecasting of the Kyrgyz Republic. The study was conducted incognito in a cross-sectional study design in the form of a random, non-repeated survey of respondents. Each survey began with a greeting, a brief statement about the purpose of the study, and an indication that the survey was completely anonymous and took no more than 10 minutes. The interview ended with an expression of gratitude.

Data analysis

The data collected from the survey about the assessment of Physician Knowledge and Prescribing Practices Regarding Antihistamine Agents in the Management of Allergic Conditions in Kyrgyzstan were further analysed using the statistical application.

Results and discussion

General characteristics of persons prescribing medications - general practitioner

Often the reasons for the irrational use of drugs and the development of complications during their use are the lack of knowledge and skills of doctors when prescribing drugs. A pharmacoepidemiological study was conducted to examine physicians' knowledge of antihistamines regarding safety and pharmacovigilance. By gender, in the analysis of 220 surveyed doctors, 80% were women and 20% were men (Bassir *et al.*, 2022).

When distributing respondents into age categories, it was revealed that the sample ranged from 30 years to 66 years, the largest percentage was older from 41 to 66 years (69%), and the average age was from 30 to 40 years (31%) (Al Amin *et al.*, 2024).

During the pharmacoepidemiological analysis of survey participants to determine the work experience of doctors, it was revealed that the largest percentage were respondents with experience from 21 to 27 years of work, whose share was 36%, the share of respondents with experience from 16 to 20 years was 28%, as well as with experience work from 11 to 15 years 25% and the share with the least work experience from 6 to 10 years – 11% (Bérard, 2021). When determining the place of work and specialization of doctors, it was found that 95% of the surveyed doctors work in government healthcare organizations, and 5% in private organizations. The specialization of the surveyed doctors was in two directions, the first was therapists, who made up 93% of the surveyed doctors, and the second was allergists, who made up 7% (Pianori *et al.*, 2020).

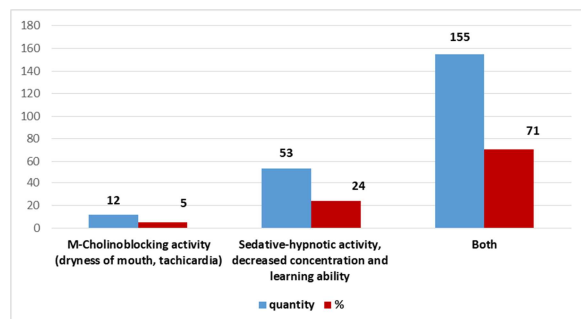


Fig. 1. Answers to the question “What are the disadvantages of first-generation antihistamines

The analysis of doctors' knowledge about the principles of rational and safe use of drugs was conducted by Kose and Colak (2021). More than 71% of doctors who participated in the survey answered questions regarding the shortcomings of first-generation antihistamines correctly, indicating that both proposed options were considered correct: M-anticholinergic, sedative and hypnotic effects, decreased concentration and learning ability, but 29% of surveyed doctors considered it incorrect selecting only one of the proposed options (Fig. 1).

When analyzing the advantages of second-generation antihistamines, more than 83% of surveyed doctors considered two proposed options to be an advantage: a prolonged duration of action (up to 24 hours) and a weak sedative effect. The remaining 17% of doctors chose a higher affinity for histamine H1 receptors, since this affinity enhances the potency of the antihistamine effect.

A study was conducted on the international nonproprietary names of antihistamines for their potential use in generic replacement. We conducted a survey “Indicate the international nonproprietary name of the drug “Kestin” (Suyunov *et al.*, 2024). The survey showed that the INN of the drug under the trade name “Kestin” was more than half of the respondents - 68% chose the correct drug ebastine, however, unfortunately, one third of the respondents made the wrong choice: 17% loratadine and 15% diphenhydramine.

The next stage of the analysis was the information and advisory activities of doctors and the degree of informing patients (Woodhead *et al.*, 2023). To assess the work of doctors, a question was drawn up: “Do you always inform the patient about the properties of the prescribed antiallergic drug.” It was determined that 79% only sometimes provide instructions on use, and 21% on an ongoing basis.

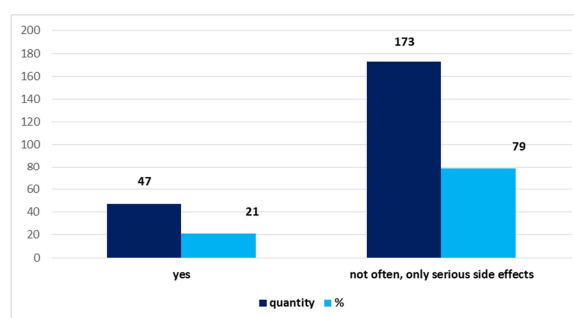


Fig. 2. Answers to the question “Do you inform the patient about possible side effects? N=220

Analysis of doctors' knowledge about adverse reactions of antiallergic drugs, measures for their prevention and correction. To questions regarding “Do you inform the patient about possible side

effects?" more than 79% of doctors rarely provide complete information and only about particularly serious reactions; unfortunately, only 21% fully inform patients (Fig. 2).

Further, in accordance with the analysis, the doctors were asked the question: "With which drugs cannot terfenadine be prescribed simultaneously?" (Ryszkiewicz *et al.*, 2023), where it was found that 63% of the surveyed doctors were against the simultaneous prescription of the antihistamine drug Terfenadine with the group of drugs erythromycin, clarithromycin, josamycin, further, 26% of doctors were against the simultaneous prescribing of antihistamines with ketoconazole, itraconazole, miconazole, and 11% of doctors were against the simultaneous prescribing of antihistamines with sparfloracin and grepafloxacin. However, it should be noted that antihistamines "Terfenadine" is contraindicated to be prescribed simultaneously with all groups of drugs presented in the questionnaire due to the development of undesirable reactions of the body (Wang and Zang, 2023).

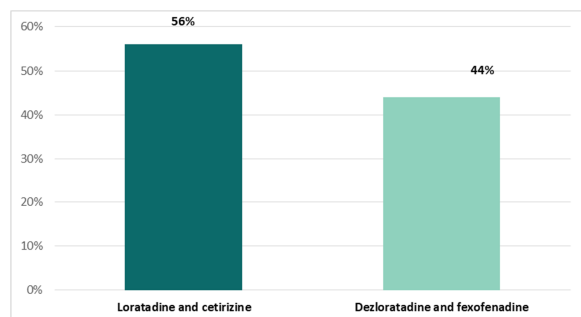


Fig. 3. Answers to the question "Write the names of the 5 most frequently prescribed drugs from the antihistamines group?", N=220

The possible additive effect of prolonging the QT interval of sparfloracin and grepafloxacin due to combined use with the antihypertensive drug Terfenadine should be taken into account, increasing the risk of developing ventricular arrhythmia, including polymorphic ventricular tachycardia. Macrolides erythromycin, clarithromycin, josamycin and imidazole antifungals ketoconazole, itraconazole, miconazole inhibit metabolism, increase plasma levels and enhance the toxic effect of the drug.

According to 220 surveyed doctors, the most prescribed antiallergic drugs are 56% INN loratadine and cetirizine under the trade name, as well as 44% desloratadine, fexofenadine (Fig. 3).

We also conducted research to study ways and methods of promoting drugs among doctors (Nourse *et al.*, 2024). To the question "Does a visit from medical representatives of pharmaceutical companies influence your decision to prescribe antiallergic medications?" according to 83% of respondents, it does not affect the question "How often do medical representatives come to you, promoting antiallergic drugs?" more than half of doctors 53% answered less than twice a month, 28% once a month (Table 1).

An analysis of the promotion of antihistamines made it possible to establish that medical representatives often present drugs using drug samples - 31%, with the help of scientific articles on a commercial drug from pharmaceutical companies - 25% and with the help of practical experience of Option Association leaders - 23%.

Table 1. Answers to the question "Does a visit from medical representatives of pharmaceutical companies influence your decision to prescribe antiallergic drugs?" and "How often do medical representatives come to you promoting antiallergic drugs?" N=220

Question	Answer	%
How often do medical representatives come to you promoting an antihistamine?	Rarely	53%
	2 times a month	7%
	1 time a month	28%
	1 time a week	12%
Does the activity of medical representatives of pharmaceutical companies influence your decision to prescribe an antihistamine?	I find it difficult to answer	9%
	No	83%
	Yes	8%

Table 2. Answers to the question “What is your opinion about the promotion of medicines with the help of medical representatives?” and “Your opinion about the quality of information provided by medical representatives?” N=220

Question	Answer	%
Your opinion on the promotion of medicines with the help of medical representatives	They also sponsor various associations for conferences, round tables with speeches by international lecturers where credit hours are issued	45%
	The person writing the prescription becomes obligated after receiving an “incentive” from pharmaceutical companies in the amount of a prescription for a certain volume of packages for a year or a quarter	19%
	Updating the doctor's knowledge about drugs through invitations to various international congresses	36%
Your opinion about the quality of information provided by medical representatives	Lobbying for the disadvantages of competitive drugs and increasing the benefits of your drug bypassing clinical trials	65%
	Information is biased and commercial	9%
	Excessive emphasis on the effectiveness of drugs	4%
	Incomplete information regarding the safety profile	22%

Table 3. Answers to the question “What methods of encouraging doctors are most often used by pharmaceutical companies when promoting drugs?”, “What modern information technologies do medical representatives use in the process of promoting drugs?”, “Where and how often do medical representatives read presentations for doctors?” N=220

Question	Answer	%
What methods of encouraging doctors are most often used by pharma comp. when promoting drugs?	Providing an interest rate in monetary terms (bonuses) from medicinal product statements	65%
	Sponsorship payment for field trips/training/scientific work/purchases of household appliances, furniture for doctors and for the department	35%
What modern information technologies do medical representatives use in the process of drug promotion?	individual email newsletters, whatsapp groups, telegram chats	91%
	actively use the format of video presentations	9%
Where and how often do medical representatives give presentations to doctors?	Every week for 5 minutes in the assembly hall	77%
	Training in restaurants	23%

Promotion of medicines with the help of medical representatives

According to the majority of doctors surveyed, medical representatives more often act as sponsors of various associations for conferences, round tables with speeches by international lecturers, where credit hours are issued. Regarding the question “What is your opinion (Furman *et al.*, 2024), about the quality of information provided by medical representatives?” 65% of the surveyed doctors noted lobbying for the disadvantages of competitive drugs and increasing the advantages of their drug bypassing clinical trials (Table 2).

While promoting the drug based on the responses of doctors, it became known that medical representatives often provide an interest rate in monetary terms (bonuses) from the prescription of

drugs (Siddiqui and Siddiqui, 2024). To increase sales, modern information technologies are required to better understand doctors; for this purpose, individual email newsletters, WhatsApp groups, telegram chats, as well as presentations by doctors are used, most often read every week for 5 minutes in the assembly hall (Table 3).

Conclusion

In order to study the knowledge of doctors about antihistamines on issues of safety and pharmacovigilance, a pharmacoepidemiological study was conducted, which revealed that of the 220 doctors surveyed, 80% were women and 20% were men aged from 41 to 66 years, with experience from 21 to 27 years of experience, 95% of which work in government healthcare organizations.

Based on the results of a pharmacoepidemiological study on safety and pharmacovigilance, it was found that doctors have a satisfactory level of knowledge on classification, principles of rational and safe use of drugs, taking into account the clinical pharmacokinetics and pharmacodynamics of antiallergic drugs. However, the information and advisory activities of doctors and the degree of informing patients, as well as warning patients from adverse reactions by doctors, are insufficient. In addition, studying the ways and methods of promoting drugs among doctors through medical representatives somewhat improves the information base of doctors about drugs.

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