Patient Preference and Adherence

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ORIGINAL RESEARCH

Patient Expectations in Allergic Rhinitis Treatment: A Mixed-Methods Study

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Introduction: Understanding patients' expectations and needs regarding allergic rhinitis (AR) treatment is key to improving adherence and outcomes. A patient-centered approach that considers subjective treatment perceptions can provide valuable insights for improving disease management.

Objective: To explore the subjective experience of patients with moderate to severe AR regarding their treatment, exploring expectations, needs, and adherence.

Methods: An observational, descriptive, cross-sectional study with a mixed-methods design was conducted during the first four months of 2024 through the Spanish Federation of Associations of Allergy and Respiratory Disease Patients (FENAER). The study included a quantitative survey (56 questions) completed by 75 patients with moderate to severe AR and a qualitative focus group with 7 patients. The focus group explored key concerns, justifications, and proposed solutions.

Results: The mean age of participants was 42.3 (SD21.7) years, with 65.3% of participants being female, 84% had moderate and 16% severe AR. Seventy-two percent reported symptom fluctuations since diagnosis, and 69% indicated an impact on daily activities, leisure, or sports. Side effects were reported by 18.6% of patients, all of whom informed their healthcare provider. While 73.3% were satisfied with their treatment, 33.3% had considered requesting a change, primarily due to perceived efficacy. More than half (54.7%) reported high adherence, yet 26.7% found treatment costs high. Regarding disease information, 58.6% found it useful, but 82.7% desired more education on AR and treatment options. The qualitative analysis revealed 15 key themes, including the need for individualized therapies, simpler administration methods, better communication with healthcare providers, emotional support, and the role of patient associations in facilitating education and adherence.

Conclusion: This study highlights the need for a patient-centered approach in AR management. Beyond efficacy, factors such as ease of administration, side effects, and communication influence satisfaction and adherence. Involving patients in decisions may improve outcomes and quality of life.

Keywords: allergic rhinitis, patient satisfaction, medication adherence, patient-centered care, focus groups

Introduction

Allergic rhinitis (AR) is a seasonal or perennial inflammatory condition of the nasal mucosa that not only affects breathing, but also the quality of life of those who experience it. Its prevalence has increased in recent decades.[1,2] In Spain, approximately 10–15% of the population suffers from moderate to severe AR, highlighting its public health relevance.[3,4]

Previous studies highlight the significant burden of moderate to severe AR from both clinical and patient perspectives. Fromer et al[5] and Cvetkovski et al[6] emphasize the impact of AR on patients' quality of life, including sleep disturbances, impaired daily functioning, and emotional distress. Additionally, the economic burden of AR, stemming from medical consultations, pharmacological treatments and possible loss of work productivity,[7,8] requires a careful assessment of costs

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and benefits. Considering patients' perceptions of treatment costs and effectiveness is crucial for identifying options that maximize benefits relative to cost while minimizing administrative complexity.[3]

Adherence to treatment is another important factor of AR management. Fox et al[9] identified barriers to adherence, such as dissatisfaction with treatment efficacy, side effects, and complex regimens, underscoring the importance of patient-centered care. Adherence goes beyond simply following prescriptions; effective communication between the patient and healthcare professionals is key. Patient feedback regarding aspects such as administration form, frequency, and cost can help tailor treatments to improve adherence.[10] Given the chronic nature of AR, a holistic approach is necessary to address its physical, emotional, and social impacts. Understanding how moderate to severe AR affects family, social and professional life can guide the development of more comprehensive and effective management strategies.[11]

Equity in access to care is also a fundamental principle in healthcare. By understanding patient experiences, we can better identify and address barriers to access, whether geographic, socioeconomic, or cultural. This informed approach facilitates more effective economic decisions and promotes more equitable disease management.[12]

The educational level of patients significantly affects the treatment of allergic rhinitis, as it largely determines their ability to understand the diagnosis, follow medical instructions, and adopt preventive measures against environmental triggers. Patients with higher education tend to show better adherence to treatment (whether pharmacological or immunological), communicate more effectively with healthcare professionals, and take a more active role in managing their condition, leading to improved clinical outcomes and quality of life. Therefore, it is essential to tailor medical information to the patient's cultural and educational background to ensure effective and equitable therapeutic care.[7]

Thus, understanding patients' expectations and needs regarding their treatment is essential in healthcare. A patient-centered perspective on moderate to severe AR and its treatment can enhance quality of life and improve overall healthcare outcomes. This approach is fundamental for achieving optimal results.[13] The objective of the study was to comprehensively explore the experience of patients with moderate to severe allergic rhinitis, encompassing their quality of life, treatment adherence, and therapeutic perception, and to identify factors influencing clinical care to inform future improvements in therapeutic strategies.

Material and Methods

A mixed-methods study with an observational, descriptive, and cross-sectional design was carried out from January to May 2024, incorporating a quantitative component through an anonymous patient survey and a qualitative component through a focus group.

Study Population

The study participants were recruited through the Spanish Federation of Associations of Allergy and Respiratory Disease Patients (FENAER). Participants were required to meet the following inclusion criteria: a confirmed diagnosis of moderate to severe AR by a specialist or primary care physician, preferably supported by diagnostic tests such as prick tests or specific IgE; age of 18 years or older; a disease duration of at least one year, used as a pragmatic proxy for basic experience with the condition and likely exposure to different treatments, although detailed treatment history was not systematically collected at inclusion; current use of medications indicated for moderate to severe AR, including antihistamines, intranasal corticosteroids, or specific immunotherapy; a reported impact on daily life, such as sleep disturbances, impaired work or academic performance, social limitations, or emotional burden; willingness to complete the study survey or participate in the focus group; and signed informed consent to ensure compliance with ethical standards and data protection regulations.

AR were classified as moderate if patients exhibited one, two or three of the following symptoms: sleep disturbance, impairment of daily activity and/or sports, impairment of school or work tasks and if the symptoms are bothersome. And AR was classified as severe, if all four of the above symptoms were present.[12]

Patients were initially contacted by Email and telephone. The purpose of the study was explained to them and they were invited to participate in the study. Detailed information about the process, confidentiality and the importance of their participation was provided. Patients who agreed to participate received confirmation and further instructions.

A convenience sampling approach was used in collaboration with FENAER, which facilitated access to a broad and diverse pool of patients across different regions of Spain. While convenience sampling is inherently limited in its ability to ensure representativeness or control sample characteristics, particular attention was paid during recruitment to include patients of varying ages, genders, and disease durations. Thus, although the method itself does not guarantee balance, the combination of recruitment through a national patient federation and the deliberate effort to incorporate heterogeneity contributed to achieving an approximately balanced sample, thereby supporting the external validity of the study.

Representation from different regions covered by FENAER was guaranteed, along with diversity in socioeconomic and occupational backgrounds. This was achieved by leveraging the structure of FENAER, which includes multiple regional associations across Spain. These associations played an active role in disseminating the study invitation through various communication channels (such as mailing lists, social media, and newsletters) enabling outreach to patients from both urban and rural areas, and from different social and professional contexts. While no formal stratification was applied, this strategy was designed to enhance the heterogeneity of the sample despite the inherent limitations of convenience sampling.

For the focus group study, seven participants were selected based on their ability to express experiences clearly, diverse perspectives on adherence and treatment efficacy, varying degrees of disease impact on daily life, and commitment to active participation. These criteria were assessed during the initial contact phase, in which potential participants were briefly interviewed by telephone or Email to explore their interest in the study, their ability to articulate personal experiences, and their availability. Information provided in the preliminary survey responses, particularly regarding treatment satisfaction, adherence, and impact on daily life, was also considered to ensure a heterogeneous and information-rich group for qualitative exploration.

Quantitative Methodology: Survey Study

A structured online questionnaire was designed to collect quantitative data on patients' sociodemographic characteristics, diagnosis and treatment history, quality of life, impact on daily activities, current treatments, subjective perception of treatment effectiveness, adherence to physician-prescribed therapies, frequency of medical visits, and additional comments. Example items included: "What is your level of education?" (sociodemographic section); "How long have you been receiving treatment for allergic rhinitis?" (diagnosis history); "Does allergic rhinitis affect your daily activities, leisure, and/or sports?" (impact on daily activities); "On a scale of 1 to 10, how would you describe your experience with your current treatment for allergic rhinitis?" (current treatments); "How would you describe your compliance with the treatment prescribed by your doctor?" (experience and adherence); and "How often do you have medical visits related to your allergic rhinitis?" (medical visits). All responses were anonymized to ensure confidentiality. Responses were anonymized to ensure confidentiality. Responses were anonymized to ensure confidentiality.

The study questions emerged from a comprehensive literature review and analysis of previous studies on the experience of patients with AR. Scientific articles, clinical reports and pathology surveys were examined to identify the most relevant areas and existing knowledge gaps. In addition, patient experience studies addressing key aspects such as efficacy and safety of treatments, quality of life, and impact on daily activities were considered.[13–45]

The final survey consisted of 56 questions of different types: multiple choice, rating scale, dichotomous, and closed and open-ended formats. Although some items addressed overlapping themes (eg, treatment cost), they were designed to capture different dimensions of the same concept, such as categorical perception versus perceived intensity. It is important to note that not all questionnaire items were included in the final analysis, and only those relevant to the objectives of the present manuscript were reported. Some quality of life questions were *Likert-type* questions based on a rating scale from 1 to 10, where 1 represents minimal impact on quality of life and 10 indicates significant impact. In the case of open-ended questions, responses were later grouped thematically for descriptive analysis, and their distribution is reflected in the results tables to illustrate patient-reported experiences in their own words. When participants left a question unanswered, the answer was coded as "Don't know" for consistency in the analysis and presentation of results.

The questionnaire is available in the Supplemental Material 1. The name "Study 3E" reflects the conceptual foundation of this research, based on three core dimensions of the patient role: Engaged, Empowered, and Experienced. These elements capture the participatory, informed, and experiential nature of patients in the management of allergic rhinitis and were used to guide the design and interpretation of the study.

Qualitative Methodology: Focus Group

To gain a deeper understanding of patients' concerns, their justifications for specific behaviors or perceptions, and the potential solutions they propose for improving AR management, qualitative insights were obtained from focus group discussions. A specific guide of questions (Supplemental Material 2) was developed to facilitate an in-depth discussion of the treatment experience in moderate to severe AR, based on emerging themes from the reviewed literature described above.[33] The reviewed literature includes a comprehensive view of allergic rhinitis, highlighting clinical and quality of life aspects, as well as a key update that can serve as a basis for structuring questions related to the disease and its implications.[11] Thus, the study questions were grounded in a solid theoretical and empirical context, allowing the findings to be better contextualised.

The focus group guide was organized into thematic blocks addressing patients' experiences with specific treatments, the impact of treatment on daily life, perceived effectiveness, ease of use and administration, side effects, adherence to medical recommendations, satisfaction, and interactions with healthcare professionals. Sample questions included: "What treatments have you used, and what was your experience with them?", "How does the treatment affect your daily life?", "What challenges have you faced regarding adherence?", "How would you describe the ease of use of delivery devices?", and "What would you improve in current treatment approaches?" These domains allowed participants to express not only their personal experiences, but also their expectations and suggestions for improving allergic rhinitis management.

During the focus group meetings, which were conducted via videoconference, the moderator adopted a structured but flexible approach, following the question guide, allowing for deviations when relevant issues arose. Each session began with a brief introduction, explaining the objectives of the study and assuring participants of the confidentiality of their responses. An open and respectful atmosphere was fostered, encouraging all participants to share their experiences and opinions.

The moderator used active listening techniques and follow-up questions to probe participants' responses, ensuring that all points of view were considered. The sessions were recorded with the consent of the participants and subsequently transcribed for analysis. The information obtained was grouped into thematic categories for ease of interpretation.

Data Processing

The qualitative variables of the survey were expressed as absolute frequency (n) and relative frequency (%), while the quantitative variables were presented as mean and standard deviation (SD). In the qualitative study, the recorded conversations were transcribed and the information was grouped into thematic sections, assessing the results, justification and solutions given by the patients in the different situations raised.

Ethical Considerations

This study was conducted in accordance with the principles of the Declaration of Helsinki. All participants provided informed consent prior to their inclusion, and the confidentiality and anonymity of their responses were guaranteed throughout the research process. The study was approved by the Ethics Committee of the University of Alicante (ref. UA-2024-02-26_2).

Results

A total of 75 patients responded to the survey (73 answered all the questions and 2 answered some of the questions). The mean age of the participants was 42.3 (SD21.7 years; range: 18–80), 65.3% (n=49) were women, 84% (n=63) had moderate rhinitis and 16% (n=12) severe; the mean time of treatment was 13 (SD12.7; range not available) years. With regard to educational level, 13.3% (n=10) had primary education, 20% (n=15) secondary education, 21.3% (n=16) had other qualifications and 45.3% (n=34) had a university degree.

Quality of Life and Impact on Daily Activities

The analysis of responses regarding quality of life reveals a wide range of patient experiences, from mild discomfort to a significant influence on overall well-being, highlighting the complexity of the issue and the importance of addressing diverse perspectives to deliver more personalized and effective care.

Fifty-four (72%) patients have experienced changes in the intensity of their symptoms since diagnosis and 69% (n=52) have had their daily activities, leisure and/or sports activities affected. Table 1 shows the mean values and standard deviations obtained in the questions on the impact of the disease on quality of life.

When asked whether they have experienced any AR-related traffic or work-related accidents, only two patients (2.7%) reported having experienced one. On the other hand, 72% (n=54) of patients feel supported by their social and work environment in relation to their health problem.

Current Treatments

Table 2 shows the results of the questions regarding their experience with their current treatment.

Table 1 Results of the Quality of Life Questions (Response Range for Each Item, *Likert-Type* Scales 1–10)

Question	Mean	SD
To what extent does allergic rhinitis affect your overall quality of life?	4.5	2.5
Does allergic rhinitis affect your psychological well-being emotionally, have you experienced insomnia, stress or anxiety related to your allergic rhinitis?	4.5	2.5
Does your allergic rhinitis affect your social life?	4.1	2.5
Do you feel uncomfortable or disturbed by the use of nasal sprays in social settings?	3.5	2.8
Does your allergic rhinitis affect your work or academic performance?	4.4	2.4
Does it affect your ability to concentrate at work or study?	4.4	2.7

Abbreviation: SD, standard deviation.

Table 2 Results Obtained in Relation to Patient Treatment

Question	Answer Options	N (%)
What are your most important expectations regarding the treatment of your allergic rhinitis?[a]	Symptom disappearance	60(80)
	Improved treatment effectiveness	16(21.3)
	Improved psychological and social well-being	3(4)
	Possibility of surgical treatments	2(2.7)
	Unflattering expectations	12(16)
What type of medicine(s) are you using to treat your allergic rhinitis?	Antihistamines	50(66.7)
	Nasal corticosteroids	52(69.3)
	Decongestants	20(26.7)
	Immunotherapy	10(13.3)
	Other (specify)	8(10.7)

(*Continued*)

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Table 2 (Continued).

Question	Answer Options	N (%)
How is your treatment(s) administered?	Tablets, tablets or capsules	47(62.7)
	Injectable	10(13.3)
	Spray, nebuliser, inhaler	63(84)
	Syrup	4(5.3)
	Gels	1(1.3)
	Others: Eye drops, wash bottle, etc.	3(4)
Do you feel that your current treatment is helping you to manage your disease and avoid further complications?	It helps me a lot	34(45.3)
	Something helps me	29(38.6)
	It does little to help me	7(9.3)
	It does not help me	4(5.3)
Have you experienced any significant side effects with the treatment?	Yes	14(18.7)
	No	59(78.7)
	Do not know	2(2.7)
Have you reported these side effects to your health care professional (doctor, nurse, pharmacist)?	Yes	14(18.6)
	No	45(60)
	Do not know	16(21.3)
What changes or improvements would you like to see in your current treatment for allergic rhinitis?	Changes in the form of administration	7(9.3)
	Changes in the number of treatment applications / dosages	14(18.7)
	Changes in the cost/benefit of the medicine	11(14.7)
	Changes in pharmacy dispensing (improvements in pharmacist advice/counselling)	9(12)
	Changes in the follow-up by the health professional to encourage compliance with the treatment prescribed by the doctor.	15(20)
	Changes in terms of improvement of symptoms of allergic rhinitis (increased efficacy)	53(70.7)
	Other	4(5.3)
	Do not know	5(6.7)
For equal or even greater efficacy, would you prefer a treatment that is easier to administer, even if it is more expensive?	Yes	45(60)
	No	28(37.3)
	Do not know	2(2.7)

(*Continued*)

Table 2 (Continued).

Question	Answer Options	N (%)
If the treatment were simpler to administer with equal or greater proven efficacy, what percentage increase in price would you be willing to pay?	10%	9(12)
	20%	12(16)
	30%	11(14.7)
	40%	3(4)
	50%	13(17.3)
	60%	3(4)
	70%	3(4)
	80%	0
	90%	1(1.3)
	100%	4(5.3)
	Do not know	16 (21.3)

Notes: [a] Some response categories were derived from open-ended answers and reflect thematic groupings of patients' own wording.

Subjective Perception of Treatment

Table 3 presents the results on the subjective perception of the current treatment of the surveyed patients.

When asked if *there are specific aspects of the device(s) that they would improve*, 22 patients responded to the question, of these 10 indicated no need for improvements, 10 suggested changes, and two provided ambiguous response. The most common suggestion was increasing the duration of the packs (n = 3), followed by greater ease of use, smaller size (n = 2), full coverage by social security, fewer daily doses, enhanced effectiveness, elimination of daily administration, and the option of an orodispersible tablet (n = 1 each).

Regarding overall satisfaction, 73.3% (n = 55) of patients responded affirmatively to the question "Are you generally satisfied with your treatment?" (item 32 of the questionnaire). Among these, 33.3% of the total sample (n = 25) stated they had considered asking their doctor to change the treatment (item 33). Their reasons (item 34) were primarily related to treatment efficacy (n = 27, 73%), followed by ease of use (n = 6, 16.2%), safety concerns (n = 1, 2.7%), and other reasons (n = 3, 8.1%). These results derive from a different set of questions than the Likert-scale item on satisfaction reported in Table 3 and are therefore presented narratively in this section to reflect the layered approach used to assess treatment satisfaction.

Table 3 Results About the Subjective Perception of Treatment (Response Range for Questions Using *Likert-Type* Scales 1–10)

Question	Mean	SD
How would you describe your experience with the current treatment for allergic rhinitis?	6.3	1.9
What is your level of satisfaction with your current treatment?	6.3	2.0
How would you rate the effectiveness of your current treatment?	6.2	2.1
They find the dosage of their treatment comfortable	58/75	77.3%
They use a single device for their treatment	39/75	52%
Whether you use one or several devices for treatment delivery, you find it easy to use.	68/75	90.7%

Experience and Adherence to Treatment Prescribed by the Physician

Table 4 presents the questions on aspects of treatment that may improve adherence and compliance to treatment.

Cost and Medical Visits

When analysing the cost of treatment, 10.7% of patients (n = 8) considered it to be very high, 16% (n = 12) high, 44% (n = 33) neither very high nor very low, 24% (n = 18) low and 2.8% (n = 2) very low (two study participants did not comment on this). The mean score obtained on the question *How expensive would you rate your current treatment in terms of price* was 5.9 (SD 2.4). On the question whether, with equal or superior efficacy and safety, *would you like to see more affordable, less expensive options available*, the percentage of affirmative answers was 95.9% (n=72). The frequency of physician visits by the AR patients surveyed was: 9.3% once a month (n = 7), 8% once every two months (n = 6), 6.7% once every three months (n = 5), 5.3% once every four months (n = 4), 2.7% once every five months (n = 2), 22.7% once every six months (n = 17), 1.4% once every seven months (n = 1), 2.7% once every eight months (n = 2), 1,4% once every nine months (n = 1), 1,4% once every 10 months (n = 1) and 36% once over 10 months (n = 27).

Regarding the information they receive from their doctor about their disease, 29.3% of patients believe it is very useful (n = 22), 29.3% useful (n = 22), 26.7% moderately useful (n = 20), 9.3% not very useful (n = 7) and 2.7% not at all useful (n = 2). In addition, the vast majority, 82.7% of patients (n = 62), say they would like to receive more information or education about AR and treatment options. Only 10.7% of patients (n = 8) use apps or digital health-related technology to manage and monitor their AR or treatment. Of these, three stated that their experience of treatment

Table 4 Aspects of Treatment That, According to the Patient's Opinion, Could Improve Their Quality of Life and Adherence to Treatment

Question	Answer Options	N (%)
How has your quality of life improved since you started treatment?	A lot	21(28)
	Moderately	35(46,7)
	Little	14(18,7)
	Nothing	4(5,3)
	Do not know	1(1,3)
Have you experienced a reduction in complications associated with allergic rhinitis since starting treatment?	Yes	56(74,7)
	No	18(24)
	Do not know	1(1,3)
Does the treatment you are currently using for your allergic rhinitis require several drugs administered separately?	Yes	44(58,7)
	No	29(38,7)
	Do not know	2(2,7)
How do you rate the ease of administration of your treatment?	Very easy	25(33,3)
	Easy	32(42,7)
	Neither easy nor difficult	14(18,7)
	Difficult	2(2,7)
	Very difficult	0
	Do not know	2(2,7)

(*Continued*)

Table 4 (Continued).

Question	Answer Options	N (%)
Are you having difficulty following the treatment prescribed by your doctor?	Yes	4(5,3)
	No	69(92)
	Do not know	2(2,7)
Do you find the form of administration of your current medicine convenient?	Yes	64(85,3)
	No	9(12)
	Do not know	2(2,7)
If you do not find the form of administration of the medicine(s) convenient, what would be the ideal form of administration for you? (Nine responses were obtained on this issue (non-compliance with actual treatment)	One application per day	1(11,1)
	One oral intake per day	1(11,1)
	Do not know	7(77,8)
Do you prefer a single device for the administration of all medicines or multiple devices?	Yes	62(82,7)
	No	8(10,7)
	Do not know	5(6,7)
Do you feel that you are complying with all the instructions and treatment guidelines recommended by your doctor?	Yes	58(77,3)
	No	14(18,7)
	Do not know	3(4)
How would you describe your compliance with the treatment prescribed by your doctor (taking the medication according to the doctor's instructions)?	Highly compliant	41(54,7)
	Moderately compliant	27(36)
	Poor performer	3(4)
	I do not usually comply with it	1(1,3)
	Do not know	3(4)
In case of non-compliance, what are the main reasons for not taking your medication / What factors most influence your compliance with the treatment prescribed by your doctor? (You can select multiple options)	Oblivion	13(17,3)
	Effectiveness of treatment	30(40)
	Side effects	2(2.7)
	Ease of administration	15(20)
	Difficulty of use of the drug delivery device(s) (if one) or drug delivery device(s) (if several)	2(2.7)
	Cost of the medicine	5(6.7)
	Other: Change of treatment approach.	1(1.3)
	Do not know	7(9.3)
If you do not follow the treatment for whatever reason, how often do you stop taking your allergic rhinitis medication? (Forty-one responses were obtained on this issue)	Too often	2(4,9)
	Frequently	7(17)
	From time to time	28(68,3)
	I have stopped treatment	4(9,8)

with such technology is very positive, for three it is positive, one neither positive nor negative and one very negative. 76% (n=57) of patients responded that they would be willing to participate in future studies related to AR and its treatments.

Qualitative Study (Focus Group): Key Challenges

The qualitative study identified 15 key themes related to the experiences and challenges faced by seven patients with moderate to severe allergic rhinitis. These themes, summarized in the following tables, provide insights into patients' concerns, their underlying justifications, and the solutions they propose for improving disease management.

Table 5 presents the main problems reported by patients, along with their justifications and possible solutions. These issues include the complexity of allergic rhinitis, treatment-related side effects, the need for individualized therapies, and challenges in the relationship with healthcare professionals. The patients' perspectives highlight the persistent nature of symptoms, the burden of multiple treatments, and concerns regarding accessibility and quality of care. The proposed solutions emphasize the importance of a more patient-centered approach, continuous treatment reassessment, and strategies to enhance adherence and comfort.

Qualitative Study (Focus Group): Facilitators for Improved Treatment Experience

Table 6 focuses on facilitators that could improve treatment experiences and outcomes, providing justifications and strategies for implementation. Patients highlighted key areas such as the need for better treatment delivery, device optimization, innovations in administration methods, and the role of complementary therapies. Additionally, psychological and emotional factors were recognized as influential in treatment adherence, reinforcing the need for holistic

Table 5 Results of the Qualitative Study: Key Challenges in Allergic Rhinitis Management: Patients' Concerns, Justifications, and Proposed Solutions

Results	Justification	Possible Solutions
Complexity of allergic rhinitis	Evidenced by the persistence of symptoms over time, the presence of co-morbidities and the need for multiple treatments.	The longevity of allergic rhinitis and the emergence of additional symptoms reinforce the need for more comprehensive and personalised therapeutic strategies.
Patient perspective	The importance of considering the patient perspective in treatment design. Participants, while acknowledging the efficacy of certain treatments, express concerns about the delivery, side effects and complexity of treatment regimens.	Need for a patient-centred approach that addresses not only clinical efficacy but also patient comfort and quality of life
Relationship with health professionals	Differences in waiting times and the need for comprehensive care highlight areas for improvement in the delivery of health services	The need for a collaborative approach to treatment decision-making
Need for constant reassessment	Imperative need to adjust treatments to adapt to the body's evolving responses	Constant re-evaluation of therapeutic strategies
Diversified approach to treatment	Variety of treatments used, from corticosteroids to immunotherapy vaccines, evidence of a diversified approach to symptom control	Continued search for more advanced and targeted options to address allergic rhinitis
Individualisation in the choice of treatments	Patients' preference for different routes of administration	The importance of individualisation in the choice of treatments adapted to the preferences and tolerance of each patient.
Challenges associated with side effects	The significant presence of side effects highlights the additional burden associated with the management of allergic rhinitis and its treatments.	The importance of addressing these challenges to improve treatment perception and adherence

Table 6 Results of the Qualitative Study: Facilitators for Improved Treatment Experience, Justifications and Strategies for Implementation

Results	Justification	Possible Solutions
Improvement needed in treatment delivery	Although the treatment is perceived to control symptoms, there are difficulties in administration	It highlights the pressing need to improve the efficiency and convenience of existing therapies to optimise the patient experience.
Optimisation of management devices	The importance of addressing the difficulties and limitations associated with treatment delivery is evident.	Improvements to make administration simpler and more efficient
Need for innovation in administration device	Unanimous preference for a single nasal spray combining corticosteroids and antihistamine	Urgent need for innovation in delivery device design to simplify therapeutic regimens and reduce potential side effects associated with multiple inhalers.
Importance of training in administration	Perception of low efficacy related to poor nasal spray administration practices	Patient education programmes to improve efficacy and adherence to treatment
Value of complementary therapies	The practice of daily nasal washes is highlighted as a beneficial strategy that not only improves symptoms, but also prolongs the feeling of relief.	The importance of considering complementary and non-pharmacological therapies in the effective management of allergic rhinitis.
Consideration of psychological and emotional aspects	Disclosure of experiences of dependence and refusal of inhalers	The need to address the psychological and emotional dimensions associated with the use of delivery devices is highlighted. It is suggested that therapeutic interventions should consider not only clinical efficacy but also patient acceptance and perceived comfort.
Adherence and influencing factors	Adherence is affected by a number of factors, including mental health and the perception of being chronically ill.	The complex interplay between economic barriers, side effects and moods highlights the need for holistic and supportive approaches to improve consistency in treatment.
Key role of patient organisations	Patient associations are identified in the provision of reliable information and emotional support.	Essential role of patient organisations in countering misinformation and providing patients with a trusted resource to understand and manage their condition

management. The proposed strategies include patient education programs, innovations in treatment devices, and stronger support from patient organizations to enhance information access and emotional well-being.

The focus group discussions provided rich insight into the daily realities of living with moderate to severe allergic rhinitis. Patients described the condition as persistent and multifaceted, often requiring continuous adjustments to treatment. As one participant noted: "It's not always easy to find the right balance — some days are better than others, and it takes time to learn how to manage it."

Participants expressed appreciation for available treatments but also mentioned areas for improvement, particularly regarding administration. For example: "The nasal sprays help, but sometimes I wonder if I'm using them correctly — it would be useful to have clearer instructions." This reflects the importance of patient education and support to optimize treatment effectiveness.

The emotional and psychological aspects of treatment adherence were also raised:

> Sticking to the routine can be hard, especially when you don't feel immediate results. But I try to follow it because I know it's part of managing the condition.

Such reflections highlight the need for a holistic approach that takes into account motivation, wellbeing, and continuity of care.

Finally, the support of patient organisations was viewed positively: "I find it reassuring to have access to reliable information and to hear from others who go through similar situations." This underscores the potential of these organisations in reinforcing patient confidence and adherence.

Discussion

The findings of this study highlight the significant impact of moderate to severe AR on patients' daily lives, treatment experiences, and adherence. Nearly three out of four patients reported changes in symptom intensity over time, with more than two-thirds experiencing disruptions in daily activities, leisure, and work performance. Despite mean quality of life scores below 5 on a 1–10 scale, the cumulative burden across domains, especially emotional well-being, work or academic performance, and concentration, indicates a moderate overall impact. This aligns with the 69% of participants who reported interference in daily life and underscores the need to assess AR beyond symptom severity, considering its broader functional consequences. Two out of three patients use antihistamines and nasal corticosteroids, yet nearly one in five reported significant side effects, with some not communicating these to their healthcare providers. While more than half of the patients expected complete symptom resolution, adherence remained a challenge, with one in five acknowledging non-compliance, mainly due to forgetfulness and perceived treatment effectiveness. Additionally, three out of five patients preferred a simpler administration method, and nearly half of them were willing to accept higher costs for increased convenience.

The qualitative findings provided deeper insights into these challenges, emphasizing the complexity of AR management, the burden of persistent symptoms, and the need for continuous treatment reassessment. One in three patients highlighted the importance of improved communication with healthcare professionals and a greater focus on shared decision-making. Key facilitators for better adherence included optimized treatment administration, patient education, and psychological support. Additionally, four out of five patients expressed a desire for more information on AR and its treatment, while patient organizations were recognized as essential sources of reliable information and emotional support. These results underscore the need for patient-centered strategies that enhance treatment efficacy, simplify administration, and improve adherence through personalized approaches.

The findings of this study align with and expand upon existing research on AR management, particularly in terms of patient expectations, treatment adherence, and the perceived effectiveness of available therapies. The patient population in the present study—predominantly middle-aged adults, with a higher proportion of women, mostly moderate AR, long-standing AR, and a university-level education—shares demographic similarities with prior studies that have examined AR burden and treatment patterns.

Our results indicate that seven out of ten patients reported variations in symptom intensity over time, with more than two-thirds experiencing a significant impact on daily activities, leisure, and work performance. This burden is consistent with findings from Canonica et al[7] who highlighted the high prevalence of moderate to severe disease and the considerable impairment in health-related quality of life. Furthermore, similar to previous studies,[5,6] our study reinforces the idea that AR remains a largely persistent condition, with patients continuing to experience symptoms despite ongoing treatment.

In terms of treatment, approximately 1 out of every 2 study patients prioritized symptom resolution as their primary expectation, with antihistamines and intranasal corticosteroids being the most commonly used therapies. This is in line with Baena-Cagnani et al,[33] who reported that these two drug classes were the preferred options among both patients and physicians in multiple countries. However, our findings also indicate that one in five patients experienced significant side effects, a factor that Hellings et al[15] identified as a key concern, particularly regarding nasal corticosteroids. Importantly, all patients who experienced side effects in our study reported them to their healthcare providers, which contrasts with Cvetkovski et al,[6] who found that many patients self-manage their AR without professional follow-up, often relying on fragmented and outdated information.

In terms of experience, most patients rated their treatment positively, with nearly 80% finding the dosage comfortable, over half using a single device, and seven out of ten expressing satisfaction, although one in three considered changing treatment due to perceived efficacy (subjective perception expressed by the patient). Fromer et al[34] found that

prescription intranasal steroid users perceived them as more beneficial, yet nearly half of AR sufferers desired more effective over-the-counter options, reflecting ongoing treatment dissatisfaction.

In regard to the quality of life improvement, three out of ten patients reported a significant improvement in their quality of life after starting treatment, while five out of ten experienced moderate improvement, and more than seven out of ten noted a reduction in complications. Canonica et al[7] demonstrated that AR has a significant impact on health-related quality of life, correlating disease severity with impairment in daily life.

Adherence remains a major challenge in AR management, with our study revealing that one in five patients do not fully comply with prescribed treatment, primarily due to forgetfulness and perceived lack of efficacy. This finding is consistent with Fox et al,[9] who emphasized that logistical barriers, such as messiness and time consumption, and the need for memory triggers are critical factors influencing adherence. Similarly, Fromer et al[34] noted that many AR sufferers initially self-manage their symptoms with over-the-counter medications and only seek medical advice when symptoms worsen, suggesting that inadequate education and communication contribute to inconsistent treatment adherence. On the other hand, we found that the positive factor that most influences compliance is the ease of administration. It is also important to note that if these patients do not adhere to the treatment for whatever reason, 7 out of 10 of them occasionally stop taking it. Given that nearly half of chronic disease patients in Spain do not follow treatment properly, it is crucial for healthcare professionals to monitor adherence. Poor patient awareness and lack of familiarity as key barriers to adherence, therefore healthcare provider-patient communication is important.[5]

In addition to logistical and perceptual factors, another relevant factor identified in this study is the educational level of patients. It is likely that the higher health literacy contributed to their ability to understand the disease and treatment instructions, communicate effectively with healthcare providers, and engage in proactive disease management. Previous studies have shown that patients with higher education tend to adhere more consistently to pharmacological therapies and report greater satisfaction with their care.[7] These findings highlight the importance of adapting clinical communication and education strategies to the patient's educational background to ensure equitable access to care and optimal health outcomes.

Six out of ten patients preferred a treatment that was easier to administer, even if it was more expensive, with four out of ten willing to pay up to 30% more. This aligns with Hellings et al,[15] who found that a significant number of patients preferred nasal sprays over oral treatments and favored combination therapy over monotherapy, indicating a preference for more convenient administration methods. Additionally, the willingness of patients to pay more for greater convenience suggests that treatment adherence could be improved by optimizing delivery methods, a point echoed in Fox et al,[9] who emphasized the role of patient-centered interventions in addressing logistical obstacles to medication use.

When analysing the costs of treatment, three out of ten patients considered treatment costs high, while the most common perception was that they were moderate, with more than half visiting their doctor at least once every ten months. Six out of ten patients found the information from their doctor useful, yet over eight out of ten expressed a desire for more education on AR and its treatment options. Cvetkovski et al[6] demonstrated that AR patients often rely on fragmented and outdated information, underscoring the need for structured self-management strategies in primary care.

The qualitative findings supported the quantitative results, identifying 15 key aspects of AR management, including disease complexity, patient-provider relationships, treatment reassessment, diversification and individualisation of treatments, assessment of side effects and improvement and innovation in treatment delivery and devices, as well as the importance of training, complementary therapies, psychological and emotional aspects, adherence and the role of patient associations.

Solutions recommended by patients were based on mixed intervention strategies, similar to those recommended to improve adherence in clinical practice.[10] They include personalized therapeutic strategies, shared decision-making, constant reassessment, treatment innovation, management of side effects, improvement of efficiency and comfort of therapies, patient education, complementary therapies, attention to psychological and emotional aspects, holistic approaches to improve adherence, and the essential role of AR patient associations.

A key strength of this study is its mixed-methods design, which integrates quantitative and qualitative approaches to provide a comprehensive understanding of the patient experience in moderate to severe AR. This combination offers a more holistic perspective on treatment effectiveness, adherence, and quality of life, distinguishing it from previous

studies that focused on isolated aspects. The collaboration with FENAER ensured access to a well-defined patient population, while the structured questionnaire, based on a thorough literature review, allowed for a systematic assessment of key variables. Additionally, the qualitative component provided deeper insights into patient concerns and expectations, enriching the interpretation of the quantitative findings. However, the study has certain limitations, the small sample size of the focus group may limit the generalizability of qualitative results, and the cross-sectional design does not allow for long-term evaluation of treatment adherence or disease progression. The recruitment through a patient organization may introduce selection bias, and the reliance on self-reported data carries the risk of recall or social desirability bias. Additionally, the use of convenience sampling, which, despite efforts to ensure diversity in age, gender, and disease duration, does not guarantee full representativeness of the broader population with moderate to severe AR. Therefore, caution should be exercised when generalizing the findings to other patient populations.

Healthcare professionals should actively involve patients in treatment decisions, address adherence barriers, and improve patient education to reduce reliance on outdated or fragmented information. From a research perspective, the mixed-methods approach used in this study underscores the importance of capturing patient experiences in chronic disease management. Future studies should include larger, more diverse populations and longitudinal designs to assess adherence and treatment effectiveness over time. Additionally, further research on digital tools and patient-friendly treatment formulations could help improve long-term AR management and health outcomes.

Conclusions

The relevance of the results shows that the comprehensive integration of patient-reported outcomes and lived experiences, contextualised within the Spanish setting, provides new insights that can inform more patient-centred approaches to allergic rhinitis management.

This study highlights the need for a patient-centered approach in the management of moderate to severe AR, emphasizing the importance of treatment convenience, adherence, and patient education. Beyond effectiveness, factors such as ease of administration, side effects, and communication with healthcare providers significantly influence patient satisfaction and adherence. Optimizing treatment delivery and enhancing patient involvement in decision-making could improve long-term outcomes and quality of life in AR management.

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Disclosure

The authors report no conflicts of interest in this work.

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