ONLINE VERSION: ISSN 1028-4818
RPNS-1853

Multimed 2026; 30: e3305

Original article

Quality of life of patients with allergic rhinitis in primary carehealth

Yuneysis Veliz Guevara I https://orcid.org/0000-0002-4538-2853
Pedro Rafael Casado Méndez II* https://orcid.org/0000-0002-4988-9475
Daimara Núñez Mariño III https://orcid.org/0009-0003-2851-306X
Carmen Elena Ferrer Magadán IV https://orcid.org/0000-0002-2840-9129
Sandra Álvarez Gutierrez V https://orcid.org/0009-0004-7341-1553

[I]University of Medical Sciences. Luis Enrique de la Paz Reyna University Polyclinic. Yara. Granma, Cuba.
[II]Simão Mendes National Hospital. Bissau, Guinea Bissau.
[III]Celia Sánchez Manduley Provincial University Hospital. Manzanillo. Granma, Cuba.
[IV]Faculty of Medical Sciences of Granma Celia Sánchez Manduley. Manzanillo. Granma, Cuba.
[V]Hermanos Cordobés Provincial University Pediatric Hospital. Manzanillo. Granma, Cuba.

* Corresponding author. E-mail:rafaelmendezpinilla@gmail.com

ABSTRACT

Allergic rhinitis is a chronic inflammatory disease of the nasal mucosa with a real impact on quality of life. In order to assess quality of life in patients with allergic rhinitis in a health area of the Yara municipality, a descriptive, cross-sectional observational study was conducted in a universe of 81 patients attending the allergy outpatient clinic at the Luis Enrique de la Paz Reyna University Polyclinic, Yara,

ONLINE VERSION: ISSN 1028-4818
RPNS-1853

Granma, from February to November 2025. The self-administered Rhinoconjunctivitis Quality of Life Questionnaire was used. The mean age was 26.42 years, with a slight predominance of females (53.09 %). Of the patients, 72.84 % perceived their quality of life as good. Nasal symptoms (35.8 %) and interference with daily activities (28.4 %) were the other factors that most contributed to poor self-perceived quality of life. Nasal congestion was the most prevalent symptom and the most frequently reported as very bothersome or interfering (62.86 %). It is concluded that 27.16 % of patients with allergic rhinitis perceived poor quality of life, with involvement in domains such as sleep and daily activities.

Keywords: Allergic rhinitis; Quality of life; Questionnaires.

Received: 12/03/2026
Approved: 10/04/2026

Introduction

Current scientific evidence classifies allergic rhinitis (AR) as a systemic disease that affects the entire respiratory tract, not just the nasal cavity. (1,2) ARIt is a type 2 chronic inflammatory diseaseNasal mucosal atopic dermatitis is an immunoglobulin E (IgE)-mediated condition characterized by symptoms such as nasal congestion, rhinorrhea, sneezing, and nasal itching following exposure to specific allergens. It frequently coexists with other atopic conditions such as conjunctivitis and asthma and can significantly affect quality of life. (3,4)

Recognized as a common disorder, it is the most common type of chronic rhinitis and of all allergic diseases; it affects between 10 and 40% of the world's population. (5,6) This disease is the third most common chronic disease among children and adolescents. Its prevalence in Western populations is estimated at up to 30% and up to 26% in the United Kingdom, with a peak in the third and fourth decades of life; (1) across the African continent, research indicates significant prevalence rates, with up to 20% of young people in South Africa and 9.1% in Ghana. (7)

It is interesting to note that several investigations have been carried out in the country regarding allergic rhinitis, its essential characteristics, risk factors, prevalence, and relationship with bronchial asthma. These studies demonstrated that inflammation of the bronchial mucosa and the presence of eosinophils in the nasal mucosa show no differences between asthmatics and rhinitis patients, at least from a morphological point of view. This is of particular interest in the follow-up of patients with allergic rhinitis and highlights the importance of the present study. (8,9)

In pathophysiological terms, allergic rhinitis results from an immunoglobulin E (IgE)-mediated allergy associated with nasal inflammation of varying intensity. In these patients, allergen-specific immunoglobulin E, synthesized in response to environmental allergens, binds to the high-affinity receptor (FC_RI) on the membranes of mast cells and basophils. The aggregation of IgE molecules bound to this receptor upon exposure to specific allergens results in the production of mediators (histamine, leukotrienes, and others) that produce the immediate allergic response, which, in the case of the nose, typically manifests as itching, sneezing, rhinorrhea, and nasal congestion. (9-12)

Allergic rhinitis (AR) is classified using an etiological-temporal system (seasonal/perennial) that has been superseded by a clinical-functional system, proposed and validated by Allergic Rhinitis and its Impact on Asthma (ARIA), which is the current standard. (10) The ARIA guidelines define intermittent AR as symptoms present less than 4 days per week or for less than 4 consecutive weeks, and persistent AR as symptoms present more than 4 days per week and for more than 4 consecutive weeks. (10,11) Symptoms are considered mild when patients do not experience sleep disturbances and can perform normal activities, while they are considered severe if they significantly affect sleep or activities of daily living, or if they are perceived as bothersome. (2,13)

Severe, refractory, or mixed RA has been associated with significant impairments in quality of life, sleep, and work performance. (14) The term quality of life was initially associated with the idea of the welfare state as a product of social development

theories or the Keynesian model. (15) The area of study of ideal quality of life or individual desires is essentially subjective, and the term no longer measures well-being exclusively.

Currently, it is evident that health-related quality of life has focused on the development of indicators or parameters that measure and evaluate the different ways in which the population becomes ill and dies. (16)

The functional effects of a disease and its concomitant treatment are perceived individually within the population, which determines the variability and complexity of measuring health-related quality of life. The effects of rheumatoid arthritis (RA) include mild problems (sleep disorders, impaired concentration and memory) and severe problems (depression, severe physical limitations, and interference with activities of daily living). (3,17,18)

Despite the high prevalence of allergic rhinitis, there are limitations in characterizing its impact on quality of life at the primary care level in local contexts, which is revealed as the scientific problem of the research.

The objective of this study was to evaluate the quality of life in patients with allergic rhinitis in a health area.

Methods

An observational, descriptive and cross-sectional study was carried out, whose universe consisted of 89 patients from the health area, the sample was made up of 81 patients of both sexes, over 15 years of age, who attended outpatient consultation of allergy, had a previous diagnosis made by an allergy specialist, of RA, and consented to participate in the research, criteria that were constituted as inclusive for the research.

Patients who did not give consent, after being informed, for the development of the research and those who did not complete the provided form were excluded.

The study period was 10 months, from February to November 2025, at the Luis Enrique de la Paz Reyna University Polyclinic, Yara, Granma.

The variables measured were age, sex and results of the chosen questionnaire items, which include daily activities, nasal symptoms, eye symptoms, other symptoms, practical problems, sleep disturbances and emotional state.

The self-administered, specific, and validated RQLQ questionnaire developed by Elizabeth Juniper was used. (1) The questionnaire consists of 28 items, grouped into 7 domains, and is scored using a 7-point Likert scale, ranging from 0 to 6 points, where 0 corresponds to no impairment and 6 points to maximum impairment. The final score is considered both overall and by domain, calculating the mean of all items in the questionnaire and of each domain. The clinical interpretation considers 4 types of patients:

- No impact on quality of life (0 points).
- Minimal impact on quality of life (0.1 – 1 points).
- Mild to moderate impact on quality of life (1.1 – 3 points).
- Severe impact on quality of life (more than 3 points).

Quality of life was analyzed as a continuous quantitative variable, expressed through the overall score and by domains of the questionnaire, considering poor quality of life to be a score higher than 3 points.

The data were collected on a form containing the variables studied and were entered into a database using Excel on a Pentium IV computer. Absolute numbers and percentages were used. Measures of central tendency, such as the mean, were also used.

The study was approved by the ethics committee of the Luis Enrique de la Paz Reyna University Polyclinic in Yara, Granma. The confidentiality of the information was guaranteed, as required by the ethical principles adopted in the study, based on the Declaration of Helsinki, Seoul, Korea, October 2008, in conjunction with the update carried out in Fortaleza, Brazil, during 2013.

ONLINE VERSION: ISSN 1028-4818
RPNS-1853

Results

In a sample of 81 patients, the mean age was 26.42 years (SD = ±6.31). A slight predominance of females was observed: 43 women and 38 men.72.84% of the patients who self-assessed perceived their quality of life as good. (Table 1)(Fig. 1).

Table 1 Distribution of patients according to sex and perception of quality of life

Sex	Good quality of life n (%)	Poor quality of life n (%)	Total n (%)
Female	32 (39.51)	11 (13.58)	43 (53.09)
Male	27 (33,33)	11 (13.58)	38 (46.91)
Total	59 (72,84)	22 (27,16)	81 (100)

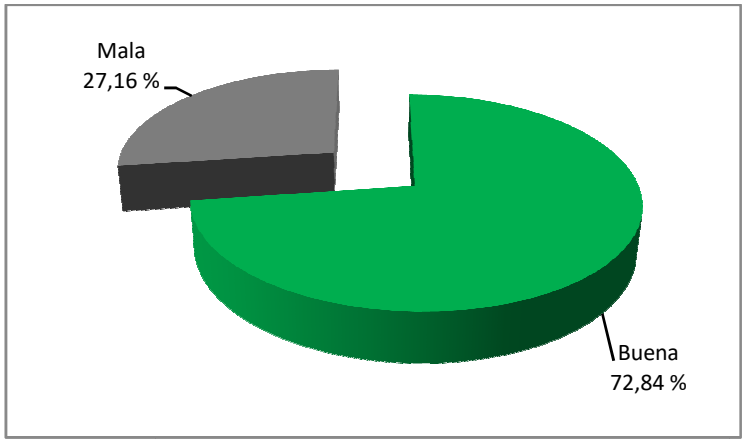

Fig 1. Distribution of patients according to perception of quality of life.

The overall RQLQ score showed that most patients experienced a low impact on their quality of life, with a predominance of categories with no impact or minimal impact. However, a significant group showed moderate to severe impairment. Among the scale items, nasal symptoms had the highest incidence in self-perception of poor quality of life (35.8%); interference with daily activities (28.4%)and the practical problems(28.4%) were the other factors that most influenced the perception of poor quality of life.(Table 2).

Table 2. Distribution of patients according to RQLQ questionnaire indicators

Indicator	Good quality of life n (%)	Poor quality of life n (%)
Nasal symptoms	52 (64.2%)	29 (35.8%)
Activities	58 (71.6%)	23 (28.39%)
Practical problems	58 (71.6%)	23 (28.39%)
Dream	60 (74.1%)	21 (25.9%)
Other symptoms	60 (74.1%)	21 (25.9%)
Emotional	62 (76.5%)	19 (23.5%)
Eye symptoms	64 (79.0%)	17 (20.98%)

Nasal congestion was the most prevalent symptom and the one most frequently reported as very bothersome or interfering, present in 51 patients (62.86%). Runny nose or rhinorrhea was reported as bothersome or very bothersome in 43 patients (53.09%), followed by frequent sneezing with the same percentage of incidence. Other symptoms such as nasal itching, tearing, eye redness, eye itching, palate or pharyngeal itching, postnasal drip, tiredness or fatigue, and hyposmia were reported in less than 30% of patients (Table 3).

Table 3. Distribution of patients according to reported symptoms and signs.

Indicator	Good quality of life n (%)	Poor quality of life n (%)	Total n (%)
Nasal congestion	22 (27.16%)	29 (35.8%)	51 (62.96%)
Rhinorrhea (runny nose)	20 (24.69%)	23 (28.39%)	43 (53.08%)
Frequent sneezing	20 (24.69%)	23 (28.39%)	43 (53.08%)
Nasal itching	17 (20.98%)	17 (20.98%)	23 (28.39%)
Tearing	8 (9.87%)	5 (6.17%)	13 (16.04%)
Itching of the palate or pharynx	17 (20.98%)	17 (20.98%)	23 (28.39%)
Postnasal drip	6 (7.41%)	1 (1.23%)	7 (8.64%)
Eye redness	3 (3.7%)	0 (0.0%)	3 (3.7%)
Eye itching	2 (2.487%)	1 (1.24%)	3 (3.7%)
Hyposmia	2 (2.47%)	0 (0.0%)	2 (2.47%)

Discussion

Studies on quality of life, as a measurable element, in patients with chronic diseases are diverse. (20) The usefulness of self-administered questionnaires as valid and relevant tools to measure quality of life in real clinical contexts provides subjective dimensions of well-being that are not captured by traditional biomedical measurements.

Because the instruments are standardized and psychometrically validated, they allow for the comprehensive evaluation of physical, psychological, and social domains, facilitating a more complete understanding of the impact of chronic diseases on patients' lives. (16)

This perspective is especially useful for research on specific diseases, in which the assessment of results in terms of patient experience and perception strengthens the clinical interpretation of therapeutic effects and the quality of care from a patient-centered perspective. (3,20)

Authors consulted agree that patients with RA experience school or work absenteeism, learning impairment, sleep disturbances, and an inability to participate in family or social activities. This inevitably leads to an impact on their emotional state, generating anxiety or depression and behavioral problems, particularly in pediatric patients. (6,14,17)

Zhang et al.,(21) highlight in their study initial evidence suggesting that the greatest impact of chronic RA on quality of life may be primarily due to nasal symptoms, ocular symptoms, practical issues, and emotional well-being. Kais et al.,(18) conclude that the impact of RA on quality of life occurs mainly in nasal symptoms, which coincides with the results of the present research.

AlKhalaf et al., (22) in their study used the questionnairesGeneral Health Questionnaire-12, Athens Insomnia Scale and mini Rhinoconjunctivitis Quality of Life Questionnaire. Patients with RAThey obtained scores on the questionnaireGeneral Health Questionnaire-12,Significantly worse scores were found in all items ($p<0.001$); 19 (38%) reached the threshold of mild to moderate psychological distress compared

to eight (5%) among the controls. Clinically relevant insomnia, according to the Athens Insomnia Scale, was present in 39 (78%) of the cases and 34 (23%) of the controls. The most affected mean domains of the mini Rhinoconjunctivitis Quality of Life Questionnaire were tiredness/fatigue (2.98 ± 1.73) and difficulty sleeping (2.80 ± 1.98). Athens Insomnia Scale scores were moderately correlated with mini Rhinoconjunctivitis Quality of Life Questionnaire scores in the cases (r=0.40, p=0.006). These authors propose systematizing behavioral sleep counseling and psychological support to reduce the social impact of rhinoconjunctivitis.

The above statement is validated by several authors, who refer to the association between RA and its negative impact on quality of life, specifically visible in the increased burden of disease due to depression, anxiety, and lack of concentration. (3,17) Bousquet et al., (23) found that feelings of worthlessness and sleep disturbances increased in patients with RA.

Sleep disruption contributes to daytime fatigue and cognitive impairment, issues attributable to patients with RA, which may explain the lower levels of concentration. Authors such as Amores et al., (24) conclude that RA can affect work and academic performance, a finding consistent with studies from Asia, Europe, and other countries.

Barron-Campos et al. (17) state that rhinorrhea significantly impacts quality of life, with 22.1% of patients perceiving their quality of life as poor. Practical problems (discomfort from using tissues, eye rubbing, and nose blowing) were reported by more than half of the patients surveyed. Nasal symptoms and sleep disturbances were cited as contributing to this poor perception of quality of life.

Bronchial mucosal inflammation does not differ between patients with rhinitis and asthma in eosinophil count or interleukin 5 or 10 formation. In fact, inflammatory changes in the bronchial mucosa have been demonstrated in non-asthmatic patients with allergic rhinitis, as well as nasal eosinophilic inflammation in asthmatic patients without nasal symptoms. Consequently, scientifically proven findings corroborate the impact of the symptoms expressed by patients, which often go unnoticed and, therefore, are not followed up or treated adequately. (8)

The literature review systematizes that actions derived from symptoms and signs in patients with RA, such as nose scratching or active nasal expulsion through forced expiration, affect the poor perception of quality of life. (3,16,25) The natural history of the disease varies with medication and consequently the perception of quality of life.Al Khalaf et al., (22) conclude that suffering from allergic rhinitis adds a significant burden on daily functioning, emotional health and sleep.

The authors consulted recommend a multidisciplinary approach with support in mental health, psychological health and sleep, along with pharmacological treatment, in order to address the overall impact on quality of life. (25,26,27)

The results show that, although most patients perceive a relatively preserved quality of life, there is a subgroup with significant impairment, mainly associated with nasal symptoms and functional limitations in daily life.

The main limitation of the present research was the sample size.

Conclusions

According to the self-assessment, 27.16% of patients with allergic rhinitis report poor quality of life, particularly in sleep and daily activities, which suggests the need for intervention, especially in primary health care, and a multidisciplinary approach, given the clinical and social relevance and impacts, which suggests further study of the condition.

Bibliographic references

1. Rosenfield L, Keith PK, Quirt J, Small P, Ellis AK. Allergic rhinitis. Allergy Asthma Clin. Immunol. [Internet]. 2024 [cited 04/22/2026]; 20:74. Available in:https://pubmed.ncbi.nlm.nih.gov/39731198/

2. Yalçıner B, Bababemez MA. Systemic inflammatory indices as predictors of treatment response in allergic rhinitis: a prospective 6-month cohort study. Ear. I don't

know. Throat. J. [Internet] 2026 [cited 04/22/2026];1455613251413545. Available at:https://pubmed.ncbi.nlm.nih.gov/41700569/

3. Cardona V, Salvany-Pijuan A, Pereira-González J. Allergic rhinitis. Med. Clin. (Engl Ed). 2025 [cited 04/22/2026]; 164 (11): 106916. Available at:https://pubmed.ncbi.nlm.nih.gov/40215921/

4. Bernstein JA, Bernstein JS, Makol R, Ward S. Allergic rhinitis: a review. JAMA. [Internet]. 2024 [cited 2026 Apr 22]; 331(10): 866–877. Available from:https://pubmed.ncbi.nlm.nih.gov/38470381/

5. Siti Sarah CO, Mohd Ashari NS. Exploration of allergic rhinitis: epidemiology, predisposing factors, clinical manifestations, laboratory characteristics, and emerging pathogenic mechanisms. Cureus. [Internet]. 2024 [cited 04/22/2026]; 16(10): e71409. Available in:https://pmc.ncbi.nlm.nih.gov/articles/PMC11558229

6. Bousquet J, Anto JM, Bachert C, Baiardini I, Bosnic-Anticevich S, Canonica GW. et al. Allergic rhinitis. Nat. Rev. Dis. Primers. [Internet]. 2023 [cited 04/22/2026]; 9:1–20. Available in:https://pubmed.ncbi.nlm.nih.gov/33273461/

7. Appiah Thompson P, Amuquandoh A. Prevalence and socioeconomic impact of allergic rhinitis among ear, nose, and throat patients of a tertiary hospital. Cureus. [Internet]. 2023 [cited 04/22/2026]; 15(12): e49768. Available in:https://pubmed.ncbi.nlm.nih.gov/38164296/

8. Hernández Cardoso L, Ceballos Rodríguez E, Báez Lopez JM., Figueroa García I, Gutiérrez Alemán L. Allergic rhinitis: the most frequent of the atopies. Acta Médica [Internet].2025[cited 22/04/2026]; 26. Available from:https://revactamedica.sld.cu/index.php/act/article/view/906/706

9. Varona Pérez P, Fabré O DE, Venero Fernández S, Suárez Medina R, Molina Esquivel E, Romero Placeres M. Allergic rhinitis, prevalence and risk factors in Cuban adolescents. Cuban Journal of Hygiene and Epidemiology. [Internet]. 2014 [cited 2026 Apr 22]; 52(3): 330-345. Available from:http://scielo.sld.cu/pdf/hie/v52n3/hig06314.pdf

10. Wise SK, Damask C, Roland LT, Ebert C, Levy J M, Lin S. et al. International consensus statement on allergy and rhinology: allergic rhinitis – 2023. Int. Forum Allergy Rhinol. [Internet]. 2023 [cited 04/22/2026]; 13(4): 293–859. Available in:https://pubmed.ncbi.nlm.nih.gov/36878860/

11. Sousa-Pinto B, Bousquet J, Vieira RJ, Schünemann HJ, Zuberbier T, Bognanni A.et.al. Allergic Rhinitis and Its Impact on Asthma (ARIA)-EAACI Guidelines-2024-2025 Revision: Part I-Guidelines on Intranasal Treatments. Allergy. [Internet]. 2026; 81(4): 954-976. Available in:https://onlinelibrary.wiley.com/doi/10.1111/all.70131

12. Abdul Latiff AH, Husain S,AbdullahB,SuppiahP, Tan V, Ing Ping T, et al. ARIA Care Pathways 2019: Next-generation allergic rhinitis care and allergen immunotherapy in Malaysia. J Pers Med [Internet]. 2023 [cited 22/04/2026]; 13(5): 835. Available at:https://pmc.ncbi.nlm.nih.gov/articles/PMC10222413/

13. Ellis AK, Cook V, Keith PK, Mace SR, Moote W, O'Keefe A. et al. Focused allergic rhinitis practice parameter for Canada. Allergy Asthma Clin. Immunol. [Internet]. I2024 [cited 04/22/2026]; 20(1): 45.https://pubmed.ncbi.nlm.nih.gov/39118164/

14. Vieira RJ, Azevedo LF, Pereira AM, Nogueira-Leite D, Rocha Gonçalves FN, Larenas-Linnemann DE. et al. Impact of allergic rhinitis control on work productivity and costs: a real-world data MASK-air study. J. Allergy Clin. Immunol. Pract. [Internet]. 2024 [cited04/22/2026]; 12(8). Available in:https://pubmed.ncbi.nlm.nih.gov/39111363/

15. Verdugo MÁ, Schalock RL. From a concept to a theory: The six eras of quality of life research and applications. Res. Dev. Disabil. [Internet]. 2024 [cited 04/22/2026]; 150: 104763. Available at:https://www.sciencedirect.com/science/article/pii/S0891422224000957

16. Pemau RC, González-Palacios P, Kerr KW. How quality of life is measured in studies of nutritional intervention: a systematic review. Health Qual Life Outcomes. [Internet]. 2024 [cited 04/22/2026]; 22(1): 9. Available in:https://pubmed.ncbi.nlm.nih.gov/38267976/

17. Barrón Campos AC, Velázquez Samano G, Velasco Medina A, Barrón Soto MA. Evaluation of the quality of life of patients with allergic rhinitis using the

Rhinoconjunctivitis Quality of Life Questionnaire (RQLQ). An. Orl. Mex. [Internet]. 2024 [cited 2026 Apr 22]; 69(4).237-242. Available at:https://www.medigraphic.com/pdfs/anaotomex/aom-2024/aom244b.pdf

18. Kais A, Hunt C, Makary CA, Ramadan HH. Impact of allergic rhinitis on quality of life in patients with chronic rhinosinusitis. Am. J. Otolaryngol. [Internet] 2024 [cited 04/22/2026]; 45(4): 104325. 325. Available at:https://pubmed.ncbi.nlm.nih.gov/38696896/

19. Juniper EF, Guyatt GH. Development and testing of a new measure of health status for clinical trials in rhinoconjunctivitis. Clin. Exp. Allergy. [Internet] 1991 [cited 04/22/2026]; 21(1): 77–83. Available in:https://pubmed.ncbi.nlm.nih.gov/2021881/

20. Dykewicz MS, Wallace DV, Bandi S, Mahdavinia M, Sedagha A. Patient-reported outcome measures in rhinitis and chronic rhinosinusitis. J. Allergy Clin. Immunol. Pract. [Internet]. 2024 [cited 04/22/2026]; 12(10): 2574–2582. Available in:https://pubmed.ncbi.nlm.nih.gov/39004415/

21. Zhang Y, Li J, Long Y, Ling Z. Enhancing quality of life with 3-year course of sublingual immunotherapy for house dust mite-induced allergic rhinitis: an observational prospective study in real-life settings. Am. J. Otolaryngol. [Internet]. 2024 [cited 04/22/2026]; 45(5): 104418. Available at:https://pubmed.ncbi.nlm.nih.gov/39067091/

22. Al Khalaf AB, Aljerayed MKJ, Alsuliman M, Alkhalifah SNA, Alghazal SF, Alhaddad HM. The impact of allergic rhinitis on the quality of life among adult patients in Alahsa, Saudi Arabia: a case-control study. Cureus [Internet]. 2025 [cited 04/22/2026]; 17(7): e87733. Available in:https://pubmed.ncbi.nlm.nih.gov/40786350/

23. Bousquet PJ, Leynaert B, Neukirch F,J Sunyer, CM Janson, J Anto. et al. Geographical distribution of atopic rhinitis in the European Community Respiratory Health Survey I. Allergy. Internet] 2008 [cited 04/22/2026]; 63:1301–1309.https://pubmed.ncbi.nlm.nih.gov/18782108/

24. Amores Valencia A, Burgos D, Branch-Bedoya JW. The impact of augmented reality (AR) on the academic performance of high school students. Electronics. [Internet].

2023 [cited 04/22/2026]; 12: 2173. Available in:https://www.researchgate.net/publication/370653718_The_Impact_of_Augmented_Reality_AR_on_the_Academic_Performance_of_High_School_Students

25. Serrano D, Cella D, Husereau D, King-Kallimanis B, Mendoza T, Salmonson T. Et al. Administering selected subscales of patient-reported outcome questionnaires to reduce patient burden and increase relevance: a position statement on a modular approach. Qual. Life Res. [Internet]. 2024 [cited 04/22/2026]; 33: 1075–1084.https://pubmed.ncbi.nlm.nih.gov/38265747/

26. Moitra S, Simoni M, Baldacci S, Maio S, Angino A, Silvi P. et al. Symptom control and health-related quality of life in allergic rhinitis with and without comorbid asthma: a multicentre European study. Clin. Transl. Allergy. 2023 [cited 04/22/2026]; 13(2): e12209. Available in:https://pubmed.ncbi.nlm.nih.gov/36825519/

27. Malina J, Huessler EM, Jöckel KH, Boog-Whiteside E, Schüle R, Schröder B. et al. Development and validation of TreatHSP-QoL: a patient-reported outcome measure for health-related quality of life in hereditary spastic paraplegia. Orphanet. J. Rare Dis. [Internet]. 2024 [cited 04/22/2026]; 19(1): 2. Available in:https://pmc.ncbi.nlm.nih.gov/articles/PMC10763482/

Conflicts of interest

The authors declare that there are no conflicts of interest.

Authorship contribution

Conceptualization: Yuneysis Veliz Guevara, Pedro Rafael Casado Méndez.

Data curation: Carmen Elena Ferrer Magadán.

Formal analysis: Yuneysis Veliz Guevara, Pedro Rafael Casado Méndez.

Project Management: Yuneysis Veliz Guevara.

Investigation:Sandra Álvarez Gutiérrez, Yuneysis Veliz Guevara.

Methodology: Pedro Rafael Casado Méndez, Carmen Elena Ferrer Magadán.

Supervision: Yuneysis Veliz Guevara; Carmen Elena Ferrer Magadán.

Validation: Daimara Núñez Mariño.

Visualization: Pedro Rafael Casado Méndez.

Original draft written by: Yuneysis Veliz Guevara, Daimara Núñez Mariño.

Writing, review and editing: Pedro Rafael Casado Méndez.