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Assessment of quality of life in patients of allergic rhinitis in Sebha city, Libya

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Abstract:
Allergic Rhinitis (AR) is a widespread chronic condition that significantly compromises individuals' health-related quality of life (HRQOL). This cross-sectional observational study was conducted to assess the multidimensional impact of AR using the 15-Dimensional Health-Related Quality of Life (15D) questionnaire. A total of 211 participants aged 15 and above were surveyed over two months (February–March 2025) across clinics and educational institutions in Sebha. The questionnaire evaluated physical, emotional, cognitive, and social health domains, providing a comprehensive overview of allergic rhinitis's burden on daily living. The results revealed that a considerable number of participants suffered from sleep disturbances, fatigue, emotional stress, reduced cognitive function, and decreased ability to perform usual activities. Over half of the respondents reported limitations in breathing and vitality, with many also experiencing mental distress and reduced psychological well-being. While the majority retained independence in mobility and communication, AR still affected core aspects of their functionality, especially in younger age groups and predominantly among female participants. This study emphasizes the necessity for a holistic approach in managing AR, focusing not only on relieving nasal symptoms but also on addressing broader impacts such as mental health, productivity, and social engagement. Early diagnosis and individualized treatment plans can contribute to improved patient outcomes and enhanced overall quality of life. Future studies should further explore intervention effectiveness and long-term management strategies in similar populations.

Keywords: Rhinitis, Quality of Life, Sleep Disturbance and Fatigue, Sebha.

تقييم جودة الحياة لدى مرضى إلتهاب الأنف التحسّسي في مدينة سبها، ليبيا

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الملخص
التهاب الأنف التحسّسي هو حالة مزمنة واسعة الانتشار تؤثر بشكل كبير على جودة الحياة المرتبطة بالصحة لدى الأفراد. أُجريت هذه الدراسة الرصدية المقطعية لتقييم التأثير متعدد الأبعاد لالتهاب الأنف التحسّسي باستخدام استبيان جودة الحياة الصحية ذي الأبعاد الخمسة عشر. شملت الدراسة 211 مشاركًا تبلغ أعمارهم 15 سنة فأكثر، وتم جمع البيانات على مدى شهرين (فبراير–مارس 2025) من عيادات ومؤسسات تعليمية في مدينة سبها. قيّم الاستبيان الجوانب الصحية الجسدية والعاطفية والمعرفية والاجتماعية، مما وفّر صورة شاملة عن عبء التهاب الأنف التحسّسي على الحياة اليومية. أظهرت النتائج أن عددًا كبيرًا من المشاركين عانوا من اضطرابات النوم، والتعب، والضغط النفسي، وتراجع الوظائف المعرفية، وانخفاض القدرة على أداء الأنشطة اليومية المعتادة. كما أفاد أكثر من نصف المشاركين بوجود قيود في التنفّس والحيوية، في حين عانى العديد منهم من ضيق نفسي وانخفاض في الرفاه النفسي. وعلى الرغم من احتفاظ الغالبية بالاستقلالية في الحركة والتواصل، فإن التهاب الأنف التحسّسي أثّر في جوانب أساسية من الأداء الوظيفي، ولا سيما لدى الفئات العمرية الأصغر، وبشكلٍ أوضح بين الإناث. تؤكد هذه الدراسة ضرورة اتباع نهج شامل في إدارة التهاب الأنف التحسّسي، لا يقتصر على تخفيف الأعراض الأنفية فحسب، بل يشمل أيضًا معالجة التأثيرات الأوسع مثل الصحة النفسية، والإنتاجية،

والتفاعل الاجتماعي. ويمكن أن يسهم التشخيص المبكر ووضع خطط علاجية فردية في تحسين نتائج المرضى وتعزيز جودة الحياة بشكل عام. كما توصي الدراسة المستقبلية باستكشاف فعالية التدخلات العلاجية واستراتيجيات التدبير طويل الأمد في مجتمعات مماثلة.

الكلمات المفتاحية: التهاب الأنف التحسّسي، جودة الحياة، اضطرابات النوم والإرهاق، سبها.

Introduction

Allergic rhinitis (AR) is a common IgE-mediated inflammatory disorder of the nasal mucosa triggered by exposure to environmental allergens and represents a major global health problem [1]. The prevalence of AR varies widely worldwide, with a reported global median prevalence of approximately 18%, reflecting marked geographical variability [2]. The pathophysiology of AR involves early- and late-phase allergic responses, initiated by allergen binding to IgE on mast cells and basophils, leading to the release of histamine and other inflammatory mediators responsible for nasal and ocular symptoms [3]. Genetic susceptibility and immunological mechanisms play a key role in disease development and persistence [4]. Beyond its classical nasal manifestations, AR has a substantial impact on health-related quality of life. Environmental allergens such as pollen, dust mites, and molds contribute to persistent or seasonal symptoms that interfere with daily functioning [5]. Sleep disturbance is a prominent consequence of AR, particularly in patients with moderate to severe disease, leading to fatigue, daytime sleepiness, and reduced vitality [6,7]. Disease severity has been shown to correlate more strongly with quality-of-life impairment than symptom duration. In addition to physical symptoms, AR is associated with psychological and cognitive effects, including anxiety, depressive symptoms, impaired concentration, and reduced academic or work performance [8,9]. These multidimensional effects highlight that quality of life in AR encompasses physical, psychological, and social domains and extends beyond traditional clinical measures of disease severity [10]. Consequently, comprehensive assessment tools are essential to capture the full burden of allergic rhinitis and to inform holistic management strategies.

Methods

Study design and setting

This cross-sectional observational study was conducted between 1 February and 31 March 2025 to assess health-related quality of life (HRQOL) in patients with allergic rhinitis using the 15-Dimensional Health-Related Quality of Life (15D) questionnaire. Data were collected using a structured questionnaire that included demographic variables (age and gender). Participants were recruited from three clinics in Sebha, medical colleges, and the Sebha Medical Center through both online (email and social media) and in-person distribution. All participants provided informed consent prior to enrollment. As all respondents were Arabic-speaking, the questionnaire was translated from English into Arabic to ensure clarity and cultural appropriateness. The 15D questionnaire was used as a preliminary tool to evaluate multidimensional quality of life in patients attending asthma and allergy clinics. A total of 211 patients aged ≥15 years were included, comprising 33 males (15.64%) and 178 females (84.36%). Allergic rhinitis was diagnosed based on the presence of at least two nasal symptoms—rhinorrhea, nasal obstruction, itching, or sneezing. Eligibility was restricted to patients reporting allergy-related symptoms due to outdoor, indoor, pet, mold, or dust exposures within the preceding two months.

Data collection procedure

The 15-Dimensional Health-Related Quality of Life (15D) questionnaire is a validated, multidimensional tool used to assess physical, mental, and psychosocial functioning across various health conditions, enabling comparisons between patients and healthy individuals [11]. It evaluates 15 health dimensions, including mobility, vision, hearing, breathing, sleeping, eating, speech, elimination, usual activities, mental function, discomfort and symptoms, depression, distress, vitality, and sexual activity, each rated on a five-point severity scale. While its broad scope may limit sensitivity to subtle changes, the 15D remains widely used in allergy and clinical research. In this study, participants rated the severity of impairment in each dimension, and responses were grouped into predefined severity levels. The percentage of participants within each severity level was calculated to provide an overview of how allergic rhinitis affects health-related quality of life across multiple domains.

Results

Demographic Characteristics of Participants

A total of 250 questionnaires were distributed, with 211 returned, yielding a response rate of 84.4%. The gender distribution of participants is presented in Table 1, showing that 15.64% were male, while 84.36% were female, indicating a predominantly female sample. The age distribution is shown in Table 2. The majority of participants (45.5%) were aged 15–25 years, followed by 30.33% in the 26–35-year age group, and 24.17% were over 35 years.

Table 1. Gender Distribution of Participants with AR

Gender	Number of participants	Percentage (%)
Male	33	15.64%
Female	178	84.36%

Table 2. Age Distribution of Participants with AR

Age	Number of participants	Percentage (%)
15-25 year	96	45.50%
26-35 year	64	30.33%
Over than 35 years	51	24.17%

Health-Related Quality of Life (HRQOL) Results:

The impact of allergic rhinitis on health-related quality of life was evaluated using selected dimensions of the 15D questionnaire that demonstrated the greatest clinical relevance. Although fifteen figures were produced during the analysis, only key figures illustrating the most important findings are included. This approach was adopted to enhance clarity and avoid redundancy. As shown in Figure 1, more than half of the participants (54.03%, n = 114) reported normal vision, being able to read newspapers and television text without difficulty. Slight visual difficulty was reported by 38.39% (n = 81) of participants. Considerable difficulty in reading was reported by 3.32% (n = 7), while 3.80% (n = 8) were unable to read printed or television text despite being able to walk without guidance.

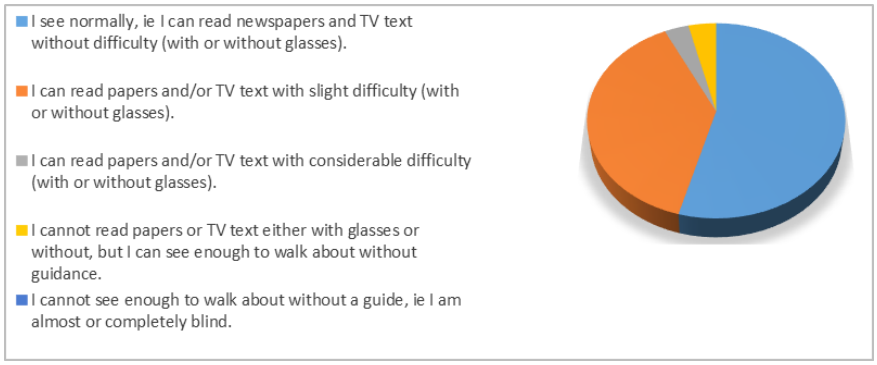

Figure 1. Vision Distribution of Participants with AR.

As illustrated in Figure 2, 32.23% (n = 68) of participants reported normal breathing without shortness of breath. The majority (53.56%, n = 113) experienced shortness of breath during heavy physical activity or brisk walking. Shortness of breath when walking on flat ground at the same pace as peers was reported by 5.69% (n = 12). Breathlessness after light activities, such as washing or dressing, was reported by 3.32% (n = 7), while persistent breathing difficulties, including symptoms at rest, were reported by 4.27% (n = 9).

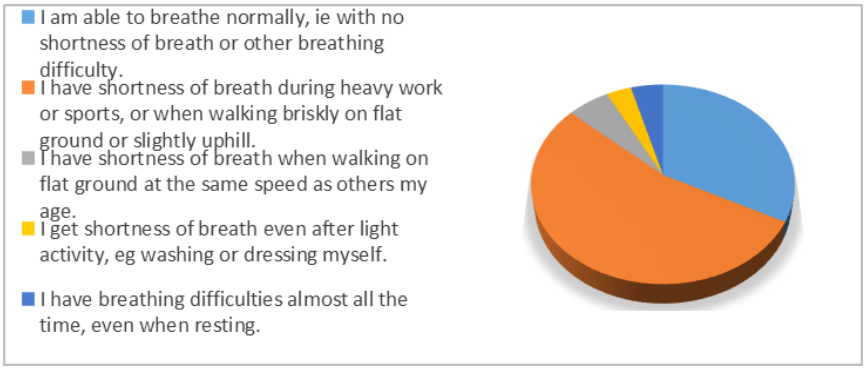

Figure 2. Breathing Distribution of Participants with AR

As shown in Figure 3, 32.23% (n = 68) of participants reported normal sleep without any sleeping problems. Slight sleep disturbances were reported by 37.92% (n = 80), while 27.97% (n = 59) experienced moderate sleep problems, including disturbed sleep or feeling insufficiently rested

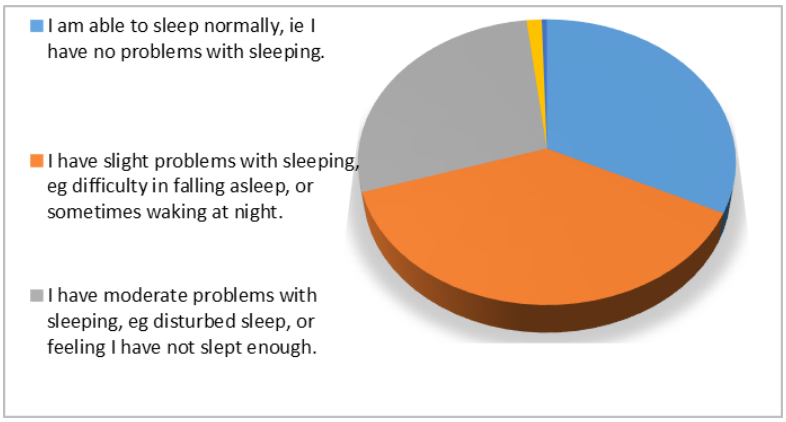

Figure 3. Sleeping Distribution of Participants with AR

Figure 4 shows that more than half of the participants (55.45%, n = 117) were able to perform their usual activities without difficulty. Minor limitations in usual activities were reported by 39.34% (n = 83). Considerable difficulty or reduced effectiveness in performing usual activities was reported by 4.27% (n = 9).

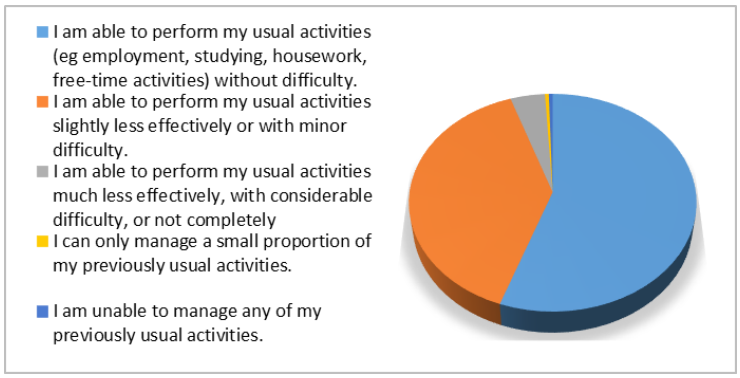

Figure 4. Usual activities Distribution of Participants with AR

Figure 5 shows that 40.76% (n = 86) of participants reported no physical discomfort or symptoms. Mild physical discomfort or symptoms were reported by 45.98% (n = 97), while 11.85% (n = 25) experienced marked discomfort. Severe physical discomfort was uncommon, reported by 0.95% (n = 2), and only 0.48% (n = 1) reported unbearable physical discomfort or symptoms.

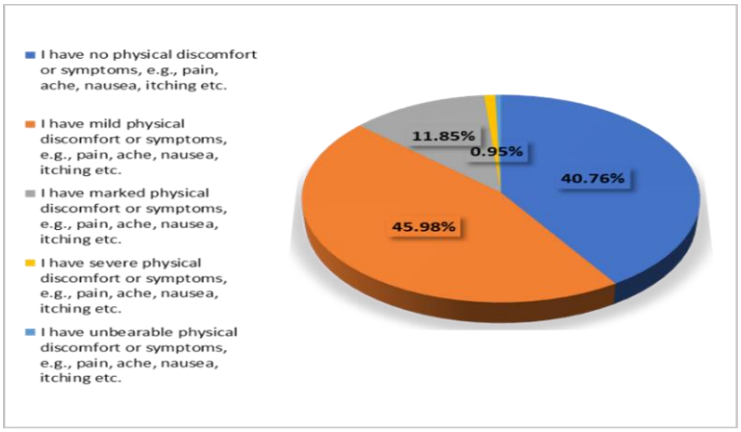

Figure 5. Discomfort and symptoms Distribution of Participants with AR

Figure 6 shows that 37.44% (n = 79) of participants did not feel sad, melancholic, or depressed. Slight feelings of sadness or depression were reported by 48.35% (n = 102), while 11.85% (n = 25) experienced moderate sadness or depressive symptoms. Very sad or melancholic feelings were reported by 2.37% (n = 5), and none of the participants reported extreme sadness or depression.

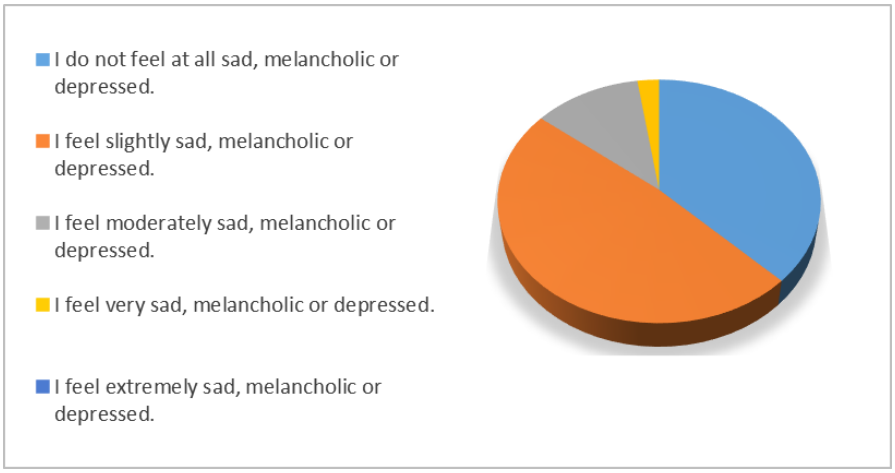

Figure 6. Depression Levels in Participants with AR

Discussion

This study evaluated the impact of allergic rhinitis (AR) on health-related quality of life (HRQOL) using the 15D questionnaire among 211 participants in Sebha City. A marked gender imbalance was observed, with females constituting 84.36% of the study population. This finding may reflect a higher perceived symptom burden among women or a greater likelihood of female participation in health-related surveys, a trend reported in previous quality-of-life studies of allergic diseases [12]. The age distribution showed that AR predominantly affected younger individuals, particularly those aged 15–25 years. This pattern is consistent with earlier epidemiological studies suggesting that younger populations experience higher exposure to environmental allergens and demonstrate heightened immunological responsiveness, while prevalence tends to decline with increasing age [1,13,14]. These findings emphasize the importance of targeted preventive and management strategies in younger age groups. Regarding the vision dimension, most participants retained normal visual function, indicating that severe visual impairment is uncommon in AR patients. However, a considerable proportion reported mild visual difficulties, which may be related to ocular allergic symptoms such as itching, redness, and tearing. Although not disabling, these symptoms can interfere with reading and screen use, thereby affecting daily functioning. The breathing dimension emerged as one of the most affected domains. More than half of the participants reported shortness of breath during physical exertion, highlighting the significant respiratory burden associated with AR. This aligns with existing literature describing nasal obstruction, airway hyperresponsiveness, and inflammation as key contributors to breathing difficulties in AR patients [1]. The variability in symptom severity observed in this study further supports the heterogeneous nature of AR, as noted by Popov et al. [15]. Sleep disturbance was a prominent finding in the sleeping dimension, with over two-thirds of participants reporting some degree of sleep impairment. Mild to moderate sleep problems were particularly prevalent, underscoring the chronic and cumulative impact of AR symptoms such as nasal congestion and nocturnal discomfort on sleep quality. These results are consistent with previous studies demonstrating a strong association between AR and impaired sleep, fatigue, and reduced daytime performance [16]. Limitations in usual activities were also evident, indicating that AR interferes with daily functioning, productivity, and social engagement. Persistent symptoms and fatigue may reduce patients' ability to perform routine tasks efficiently, contributing to reduced overall well-being. High levels of discomfort and symptoms were reported, reflecting the ongoing physical burden of AR. Persistent nasal symptoms, headache, and general malaise are well-recognized contributors to reduced HRQOL in allergic rhinitis. Additionally, impairment in the distress dimension highlights the psychological and emotional impact of AR, suggesting that chronic symptom burden may lead to increased stress, frustration, and reduced emotional resilience.

Overall, these findings confirm that allergic rhinitis exerts a substantial multidimensional impact on HRQOL, extending beyond nasal symptoms to affect respiratory function, sleep, daily activities, physical comfort, and emotional well-being. The results support the need for a holistic management approach that integrates symptom control with strategies addressing sleep quality, psychological health, and functional impairment.

Conclusion

This study assessed the impact of allergic rhinitis on health-related quality of life using the 15D questionnaire. The findings indicate that allergic rhinitis significantly affects multiple domains of quality of life, particularly breathing, sleep, vitality, and mental well-being. Many patients experienced fatigue, psychological stress, and reduced daily functioning. Although most participants maintained their usual activities, a notable proportion reported moderate functional limitations. These results confirm that allergic rhinitis imposes a multidimensional burden that extends beyond nasal symptoms, highlighting the need for comprehensive management approaches.

Recommendations

A holistic management strategy for allergic rhinitis is recommended, addressing both physical symptoms and psychosocial consequences. In addition to pharmacological treatment, attention should be given to sleep quality, emotional well-being, and patient education. Psychological support and early intervention may improve overall quality of life. Future longitudinal studies are needed to evaluate long-term outcomes and the influence of gender and disease severity, which may support more individualized treatment approaches. A multidisciplinary model of care is encouraged to optimize patient outcomes.

Limitations

This study has several limitations. Its cross-sectional design limits causal inference and assessment of long-term effects. The predominance of female participants may restrict generalizability, and reliance on self-reported data introduces potential reporting bias. Despite these limitations, the study provides valuable insight into the quality-of-life impact of allergic rhinitis.

Disclaimer

The article has not been previously presented or published, and is not part of a thesis project.

Conflict of Interest

There are no financial, personal, or professional conflicts of interest to declare.

Ethical Considerations

This retrospective study was approved by the Research Ethics Committee of the Faculty of Pharmacy, Sebha University. The approval was granted under letter reference number 1061/2026.

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