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ASSESSMENT OF QUALITY OF LIFE IN PATIENTS WITH BRONCHIAL ASTHMA

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Abstract This article examines the impact of bronchial asthma on patients’ health-related quality of life, focusing on physical, psychological, and social aspects of well-being. The study analyzes the relationship between asthma control, respiratory symptoms, disease exacerbations, and limitations in daily activities. Based on a review of scientific literature, particular attention is given to standardized assessment instruments, including the Asthma Quality of Life Questionnaire (AQLQ), Mini-AQLQ, and Short Form-36 Health Survey (SF-36). The findings indicate that poorly controlled asthma, frequent exacerbations, sleep disturbances, and emotional distress are associated with reduced quality of life. The article emphasizes the importance of comprehensive quality-of-life assessment for identifying patients’ needs, evaluating treatment effectiveness, and developing individualized management strategies. Regular monitoring of patient-reported outcomes, combined with clinical evaluation, may contribute to improved asthma control and overall patient well-being.

Key words: bronchial asthma, quality of life, health-related quality of life, asthma control, AQLQ, respiratory symptoms, psychological well-being, physical activity, patient-reported outcomes, treatment effectiveness.

Introduction. Bronchial asthma is one of the most widespread chronic respiratory diseases and represents a major global public health challenge. It is characterized by chronic airway inflammation, bronchial hyperresponsiveness, and variable expiratory airflow limitation, resulting in recurrent episodes of wheezing, coughing, shortness of breath, and chest tightness. According to the World Health Organization, asthma affected approximately 262 million people worldwide in 2019 and caused approximately 455,000 deaths [1]. Despite advances in diagnostic methods and pharmacological treatment, bronchial asthma continues to impose a considerable burden on patients, healthcare systems, and society. The clinical significance of bronchial asthma extends beyond respiratory impairment. The disease can substantially influence patients' physical functioning, emotional stability, social relationships, occupational performance, and overall perception of health. Recurrent respiratory symptoms, unpredictable exacerbations, and the necessity for long-term treatment may interfere with daily activities and reduce personal independence. Consequently, the assessment of quality of life has become an important component of comprehensive asthma evaluation. Health-related quality of life (HRQoL) is a multidimensional concept reflecting an individual's perception of the effects of health status and disease on physical, psychological, and social functioning. In patients with bronchial asthma, HRQoL is influenced by symptom frequency, disease severity, asthma control, physical activity limitations, sleep disturbances, treatment burden, and associated psychological conditions. Unlike traditional clinical indicators, such as forced expiratory volume in one second (FEV_1) and peak expiratory flow (PEF), quality-of-life measures provide direct

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information about patients' experiences and the practical consequences of their disease. Previous studies have demonstrated that individuals with poorly controlled asthma frequently experience reduced physical endurance, restricted participation in recreational activities, and impaired occupational functioning. Nocturnal symptoms may disturb normal sleep patterns, leading to daytime fatigue, decreased concentration, and reduced productivity. Furthermore, the unpredictability of asthma attacks may contribute to anxiety, fear, and avoidance of activities perceived as potential triggers. The psychological consequences of bronchial asthma are particularly important because emotional distress can influence symptom perception, treatment adherence, and disease management. Patients with persistent symptoms may experience frustration, uncertainty, and reduced confidence in their ability to maintain normal daily activities. These difficulties may be intensified by comorbid anxiety or depressive symptoms, which are associated with poorer quality-of-life outcomes. Another important factor affecting quality of life is the degree of asthma control. Patients with well-controlled asthma generally report fewer activity limitations and better overall functioning than those with uncontrolled disease. However, clinical measures of asthma control and HRQoL are related but distinct concepts. A patient may demonstrate acceptable pulmonary function while continuing to experience emotional distress, treatment-related concerns, or limitations in daily activities. Standardized questionnaires have therefore been developed to provide a systematic assessment of asthma-related quality of life. Among the most widely used instruments are the Asthma Quality of Life Questionnaire (AQLQ), Mini-AQLQ, and generic health-status questionnaires such as SF-36. These instruments evaluate different dimensions of patient well-being and allow researchers and clinicians to assess the broader impact of asthma on everyday life. The scientific relevance of investigating quality of life in patients with bronchial asthma is associated with the need to move beyond disease-centered evaluation toward a comprehensive patient-centered approach. Understanding the factors that contribute to reduced quality of life may facilitate the identification of unmet clinical needs, improve treatment planning, and support the development of effective rehabilitation and educational interventions. The aim of the present study is to evaluate the principal factors influencing quality of life in patients with bronchial asthma, examine the relationship between disease control and patient-reported outcomes, and analyze the clinical significance of standardized quality-of-life assessment instruments. The study focuses on physical, psychological, and social dimensions of quality of life, with particular attention to the influence of respiratory symptoms, exacerbation frequency, treatment adherence, and functional limitations.

Literature review. The assessment of quality of life in patients with bronchial asthma has become an important area of respiratory medicine, particularly because traditional clinical indicators do not fully reflect the burden of disease experienced by patients. Scientific investigations have demonstrated that asthma influences not only respiratory function but also emotional well-being, physical activity, social participation, and occupational performance. Juniper et al. (1992) [3] made a significant contribution to the evaluation of asthma-related quality of life by developing the Asthma Quality of Life Questionnaire (AQLQ). The instrument was designed to assess functional limitations and problems experienced by adults with asthma. Its development established an important methodological foundation for measuring patient-reported outcomes in clinical research. Juniper et al. (1999) [4] subsequently developed and validated the Mini Asthma Quality of Life Questionnaire, a shorter instrument consisting of 15 items. The researchers demonstrated that the questionnaire could provide a practical approach to assessing quality of life while reducing the burden of questionnaire

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completion. The Mini-AQLQ evaluates symptoms, activity limitations, emotional functioning, and environmental stimuli. The standardized version of the AQLQ was also validated by Juniper and colleagues [5], supporting its application in comparative clinical studies. These investigations demonstrate the importance of using reliable and validated measurement instruments when evaluating the effects of bronchial asthma on patients' daily lives. Research on patient-reported outcomes has further established that quality of life and asthma control represent related but distinct clinical dimensions. Instruments such as the Asthma Control Questionnaire (ACQ) evaluate the degree of disease control, whereas quality-of-life questionnaires assess the broader consequences of asthma for daily functioning and well-being. The Global Initiative for Asthma (GINA) emphasizes that comprehensive asthma assessment should include symptom control, future exacerbation risk, treatment-related factors, and comorbid conditions that may contribute to reduced quality of life [2]. This approach supports the integration of patient-reported outcomes into routine clinical evaluation. Despite advances in quality-of-life measurement, several challenges remain. Differences in patient populations, cultural backgrounds, disease severity, psychological characteristics, and questionnaire selection may influence reported outcomes. Therefore, standardized and culturally appropriate assessment methods are necessary to improve the comparability and clinical interpretation of quality-of-life measurements.

Materials and methods. The present study was designed as a narrative review of scientific literature concerning health-related quality of life in patients with bronchial asthma. The analysis focused on clinical and methodological publications addressing asthma-related quality-of-life impairment, disease control, psychological well-being, physical functioning, and validated patient-reported outcome measures.

The following assessment instruments were examined:

- Asthma Quality of Life Questionnaire (AQLQ): a disease-specific instrument evaluating symptoms, activity limitations, emotional functioning, and environmental stimuli.
- Mini Asthma Quality of Life Questionnaire (Mini-AQLQ): a shorter disease-specific instrument suitable for efficient quality-of-life assessment.
- Asthma Control Test (ACT): a questionnaire evaluating symptom control rather than quality of life directly.
- Short Form-36 Health Survey (SF-36): a generic instrument evaluating physical and mental health-related functioning.

The methodological analysis included a comparison of the domains assessed by these instruments, their clinical applications, and their relevance to patient-centered asthma management. Particular attention was given to the relationship between quality of life and asthma control, respiratory symptom burden, exacerbation history, psychological distress, and limitations in daily activities. No original patient data were collected. Accordingly, the results represent a synthesis of published scientific evidence rather than findings from a newly conducted clinical trial or observational study.

Results. The reviewed literature indicates that bronchial asthma may negatively influence several interconnected dimensions of patients' quality of life. Respiratory symptoms, including dyspnea, wheezing, coughing, and chest tightness, can limit physical activities and interfere with normal daily functioning. Patients may avoid exercise, household tasks, occupational activities, or recreational participation because of concerns about symptom development. Nocturnal respiratory

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symptoms may also impair sleep quality, leading to fatigue, reduced concentration, and decreased productivity during the following day. Psychological functioning represents another important dimension. Patients experiencing recurrent asthma attacks may develop anxiety concerning unpredictable respiratory symptoms or potential exacerbations. Emotional distress may further influence disease perception and self-management behavior. Social functioning may also be affected when patients restrict participation in activities involving physical exertion, environmental allergens, or other perceived asthma triggers.

Table 1. Main dimensions of quality-of-life impairment in patients with bronchial asthma

Dimension	Common problems	Potential consequences
Physical functioning	Dyspnea, fatigue, exercise limitation	Reduced physical activity
Emotional well-being	Anxiety, fear of exacerbations, distress	Reduced psychological well-being
Sleep quality	Nocturnal cough, wheezing, breathlessness	Daytime fatigue
Social functioning	Avoidance of activities and environmental triggers	Reduced social participation
Occupational functioning	Symptoms during work, absenteeism	Reduced productivity
Treatment-related functioning	Medication burden, inhaler difficulties	Reduced satisfaction and adherence

Source: Literature-based synthesis of asthma-related quality-of-life domains [2–6].

These findings indicate that quality-of-life impairment in bronchial asthma extends beyond physiological respiratory dysfunction and requires multidimensional evaluation.

Assessment Using the Asthma Quality of Life Questionnaire. The AQLQ is one of the most established instruments for evaluating disease-specific quality of life in adults with bronchial asthma. The original questionnaire contains 32 items organized into four principal domains: symptoms, activity limitation, emotional function, and environmental stimuli. Responses are scored on a seven-point scale, where higher scores indicate better asthma-related quality of life.

The overall AQLQ score is calculated as the arithmetic mean of the completed item scores, according to the instrument's scoring instructions.

$$\text{AQLQ score}=\frac{\sum_{i=1}^{n} X_i}{n}$$

Where:

X_i represents the score assigned to an individual questionnaire item, and \(n\) represents the number of scored items.

For example, a hypothetical patient with a total score of 160 across 32 items would have:

$$\text{AQLQ score}=\frac{160}{32}=5.0$$

This score represents the patient's average questionnaire response. Its clinical interpretation should consider the patient's baseline status, individual domain scores, and changes over time.

A change of approximately 0.5 points in the AQLQ is commonly used as a threshold for a clinically important within-person difference, although interpretation depends on the context and instrument version.

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Comparison of Quality-of-Life Assessment Instruments. Different instruments provide complementary information regarding the impact of asthma on patients' health.

Table 2. Comparison of commonly used assessment instruments

Instrument	Main purpose	Number of items	Scoring
AQLQ	Asthma-specific quality of life	32	1–7; higher is better
Mini-AQLQ	Brief asthma-specific quality-of-life assessment	15	1–7; higher is better
ACT	Asthma symptom control	5	5–25; higher indicates better control
SF-36	General health-related quality of life	36	Domain scores generally 0–100; higher is better

The AQLQ and Mini-AQLQ are particularly suitable for evaluating the impact of asthma on patients' everyday lives. In contrast, the ACT primarily measures symptom control, while SF-36 allows broader comparisons across different health conditions. The use of disease-specific and generic instruments together may provide a more comprehensive understanding of patient well-being.

Relationship Between Asthma Control and Quality of Life. The reviewed literature supports a close relationship between asthma control and health-related quality of life. Patients with frequent daytime symptoms, nocturnal awakenings, activity limitations, and recurrent exacerbations are more likely to experience impaired physical and psychological functioning. Improvement in asthma control may reduce symptom burden, improve sleep quality, and increase participation in daily activities. However, the relationship is not absolute. Patients with relatively well-controlled respiratory symptoms may continue to experience anxiety, treatment-related concerns, or limitations caused by comorbid conditions. Consequently, quality-of-life assessment should be considered complementary to clinical measures of asthma control.

Psychological and Social Factors Affecting Quality of Life. Psychological and social factors can substantially influence the experience of living with bronchial asthma. Fear of sudden respiratory attacks may contribute to avoidance behavior, particularly during exercise or exposure to environmental triggers. Anxiety and depressive symptoms may also influence patients' perception of disease severity, treatment satisfaction, and ability to perform daily activities. Social support, access to healthcare, health literacy, and confidence in self-management may influence how patients adapt to the long-term demands of asthma. These findings suggest that comprehensive asthma care should address not only respiratory symptoms but also emotional well-being and practical barriers to disease management.

Discussion. The findings of the present literature review demonstrate that quality of life in patients with bronchial asthma is influenced by a complex interaction of clinical, psychological, social, and treatment-related factors. Although bronchial asthma is primarily characterized by chronic airway inflammation and variable expiratory airflow limitation, its consequences extend beyond respiratory dysfunction and may significantly affect patients' everyday experiences. One of the most important findings is the relationship between asthma symptom control and health-related quality of life. Patients experiencing frequent dyspnea, coughing, wheezing, and nocturnal respiratory symptoms may demonstrate limitations in physical functioning, reduced sleep quality, and impaired participation in daily activities. These observations are consistent with the principles of contemporary asthma

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management, which emphasize the importance of symptom control and prevention of exacerbations. The investigations conducted by Juniper et al. [3–5] established the importance of standardized quality-of-life instruments for assessing the broader effects of bronchial asthma. Their research demonstrated that disease-specific questionnaires can capture dimensions of patient well-being that are not adequately represented by conventional physiological measurements. In particular, the AQLQ and Mini-AQLQ provide structured information regarding symptoms, activity limitations, emotional functioning, and environmental factors. An important consideration is that pulmonary function parameters and quality-of-life scores do not always demonstrate a strong direct relationship. Some patients with relatively preserved spirometric values may experience considerable psychological distress or limitations in daily activities. Conversely, individuals with measurable airflow obstruction may report relatively satisfactory quality of life because of successful adaptation, effective symptom management, or differences in symptom perception. The psychological burden of bronchial asthma deserves particular attention. Recurrent exacerbations and uncertainty regarding symptom development may contribute to anxiety, emotional distress, and reduced confidence in performing physical activities. These psychological factors can influence treatment adherence, symptom perception, and overall satisfaction with disease management. Furthermore, the social and economic consequences of asthma may contribute to impaired quality of life. Repeated medical consultations, medication expenses, work absenteeism, and restrictions in occupational activities may create additional burdens for patients and their families. These factors highlight the importance of considering socioeconomic circumstances when evaluating patient-reported outcomes. The reviewed evidence also suggests that quality-of-life assessment can provide valuable information regarding the effectiveness of asthma treatment. Improvement in symptom control and reduction in exacerbation frequency may be accompanied by better physical functioning, emotional well-being, and participation in everyday activities. However, changes in quality-of-life scores should be interpreted alongside clinical findings and other patient-reported outcomes. Current international recommendations emphasize the importance of individualized asthma management, including evaluation of symptom control, exacerbation risk, treatment adherence, inhaler technique, and comorbid conditions [2]. Integrating quality-of-life questionnaires into this approach may facilitate the identification of patients who require additional educational, psychological, or rehabilitative support. The present review has several limitations. First, it does not include original patient observations or statistical analysis of questionnaire scores. Second, differences in study populations, questionnaire instruments, cultural characteristics, and clinical settings may influence the comparability of reported outcomes. Third, the relationship between quality of life and asthma severity may be affected by confounding factors, including age, comorbidities, socioeconomic status, and treatment access. Future research should focus on longitudinal investigations evaluating changes in quality of life among patients with different levels of asthma control. Particular attention should be given to the relationship between psychological well-being, treatment adherence, pulmonary function, and patient-reported outcomes. Overall, the findings indicate that quality-of-life assessment provides an essential perspective on the burden of bronchial asthma. A comprehensive approach combining clinical evaluation, pulmonary function testing, validated questionnaires, and psychosocial assessment may contribute to more effective and patient-centered disease management.

Conclusion. Bronchial asthma is a chronic respiratory disease that can significantly impair patients' health-related quality of life. Its impact extends beyond respiratory symptoms and includes

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physical limitations, sleep disturbances, emotional distress, reduced social participation, and occupational difficulties. The analysis of scientific literature indicates that poor asthma control, frequent exacerbations, persistent respiratory symptoms, and psychological comorbidities are important factors associated with reduced quality of life. However, the degree of quality-of-life impairment cannot be determined solely from spirometric measurements or conventional clinical indicators. Validated assessment instruments, particularly the Asthma Quality of Life Questionnaire and Mini Asthma Quality of Life Questionnaire, provide valuable information about patients' physical, emotional, and social functioning. Their application alongside asthma control questionnaires and pulmonary function testing allows a more comprehensive evaluation of disease burden. The integration of quality-of-life assessment into routine asthma management may facilitate early identification of unmet patient needs, support individualized treatment planning, and improve the evaluation of therapeutic outcomes. In conclusion, the assessment of health-related quality of life should be considered an important component of comprehensive bronchial asthma management. Future clinical investigations should focus on identifying the factors that most strongly influence patient-reported outcomes and developing effective strategies to improve the long-term well-being of individuals living with bronchial asthma.

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