REVIEW ARTICLE
PRACA POGLĄDOWA

# EMOTIONAL DISTRESS AND QUALITY OF LIFE IN ALLERGIC DISEASES

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**ABSTRACT**

Emotional disorders accompany many somatic diseases, especially ones with severe or chronic course, and such are allergic diseases. Long-term course of the disease, the need for chronic treatment and repeated exacerbations as well as symptoms of depression or anxiety have a significant impact on the quality of life of patients, constituting a serious burden both from the point of view of the individual and the society. The data evaluating emotional disturbances and their impact on the quality of life in three atopic diseases: bronchial asthma, atopic dermatitis and seasonal rhinitis were analysed. Mood disorders as well as mental and behavioral disorders due to alcohol abuse are the most common psychiatric disorders observed in patients with bronchial asthma. There are data indicating a relationship between the occurrence of allergic rhinitis and mood disorders, anxiety disorders and suicidal tendencies. Atopic dermatitis is associated with an increased risk of depressive and anxiety disorders and sleep disorders, and in children with more prevalence of behavioral disorders. Most studies highlighted the relationship between emotional disorders and quality of life in the above-mentioned patient groups. In addition to physical ailments, patients suffering from allergic diseases also report emotional problems that can adversely affect the course of the disease, the treatment process, and reduce quality of life. Therefore, these patients require a holistic approach with a more accurate assessment of emotional disorders.

**KEY WORDS:** quality of life, depression, allergic diseases

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## INTRODUCTION

An allergy according to the classic definition means specific, disadvantageous reactions depending on the secondary immune response to contact with a foreign antigen. In most cases the antigen is inoffensive to a healthy person. The immune response may depends on the antibodies that most commonly belong to the IgE class and the cellular response. The hereditary tendency to over-produce specific IgE in response to ordinary doses of antigens is called atopy. Atopic diseases include asthma, allergic rhinitis and atopic dermatitis which may be characterized by a chronic course and lead to permanent and irreversible impairment of the function of the effected organ. Although in many Western countries the prevalence of atopic diseases in recent years seems to be stable, in developing countries it is still growing. Long-term course, the need for chronic treatment and repeated exacerbations significantly affect the quality of life of patients, constituting a serious burden on the individual and society [1]. The quality of life (itself) is a multidimensional and interdisciplinary concept. Depending on the branch of science, the emphasis is on different aspect [2]. In medicine the attempt to formulate a uniform definition of quality of life conditioned by health condition was undertaken by Shipper, taking into account the physical state, mental state, social situation and bodily sensations[3,4]. Undoubtedly, the above-mentioned three dimensions of quality of life influence the human mental state. People with allergic diseases are much more exposed to the occurrence of mental disorders than the healthy part of the population [5]. The occurrence of psychopathological symptoms such as anxiety, depression syndrome or sleep disorders raises another problem for the patient. For this reason, an assessment of the risk of these disorders will allow early intervention and improvement of the quality of life.

## REVIEW AND DISCUSSION

### BRONCHIAL ASTHMA

Bronchial asthma is a chronic inflammatory disease of the respiratory tract associated with their hyper-responsiveness and obstruction, which can be reversible spontaneously or through treatment [6], in the course of which there are exacerbations caused by various factors. The patients' quality of life depends on the control of asthma and the associated number of exacerbations [7]. Research shows that one of the most important factors of repeated exacerbations are mental disorders [8]. The most common psychiatric disorders observed in patients with asthma are mood disorders, depression, anxiety disorders and alcohol abuse [9, 10]. Due to the frequent coexistence with asthma of psychiatric disorders, it is difficult to conclude whether asthma may increase the probability of psychiatric disorders or mental disorders may lead to asthma exaxerbation [5, 11]. It is certain that both the symptoms of asthma and the deterioration of the mental state significantly effect the quality of life of patients. Moreover asthmatics have worse indicators of quality of life and anxiety, even though the symptoms of asthma are under clinical control [12].

Questionnaires most commonly used to assess the quality of life in asthma are The Adult Asthma Quality of Life Questionnaire (AQLQ) and The Asthma Life Impact Scale (ALIS). AQLQ was created at McMaster University in Ontario and published in 1992. It measures four domains: activity limitation, emotional function, exposure to environmental stimuli, and symptoms [13]. ALIS is a new questionnaire, developed in 2010 by Galen Research. The Asthma Life Impact Scale comprehensively captures the holistic impact of asthma on the QoL of the patient and focuses more on emotional issues [14].

In Sweden, in the years 2005-2015, a cohort study was conducted to investigate temporal variation in Health-Related Quality of Life (HRQL) and factors influencing low HRQL in patients with asthma. It was found that HRQL in Swedish patients with asthma is generally good and unchanged during the last decade. Exacerbations, self-rated moderate/severe disease, overweight, obesity, heart disease, depression/anxiety and rhinitis were associated with lower HRQL [15].

The relationship between asthma and depression / anxiety has been the subject of numerous studies in recent years. It has been proven that asthma is associated with an increased risk of depression and anxiety disorders [16]. Studies confirm also the association between major depressive disorder and panic disorder and seasonal allergies, and extends this relationship to generalized anxiety disorder and PTSD [17]. Depression is associated with autonomic and immune dysregulation, yet this remains poorly explored in asthma. The presence of depressive disorder may influence FEV1 in patients with occupational asthma, which may be via autonomic pathways [18].

An important area effefcting the quality of life that is reduced in asthmatic patients is daily activity. Factors related to the daily physical activity of patients with asthma were examined by monitoring SPD (steps walked per day). The research has shown that age, anxiety, and FEV1 were significantly associated with the number of SPD in patients with asthma. Researchers stressed the importance of reducing anxiety as part of an attempt to increase physical activity of patients and the need for further research related to this issue [19].

In studies on the quality of life in bronchial asthma, attention was also paid to the relationship between stress tolerance and disease symptoms. Findings suggest that targeting distress tolerance may be helpful in improving asthma outcomes [20].

Further exploration of the quality of life problem in asthma can significantly contribute to the improvement of therapy. This is a very socially important problem because allergy might impact suicidality indirectly through increased pain/discomfort, poor sleep, and depression [21]. Unfortunately psychiatric morbidity is a neglected area in the management and care of physical illnesses, especially, bronchial asthma [22].

## ALLERGIC RHINITIS

Allergic rhinitis (AR) is the most prevalent type of chronic rhinitis and is strongly associated with asthma and conjunctivitis. Prevalence of allergic rhinitis is 10–20% in the population, and evidence suggests upward tendency [23]. The general symptoms are nasal congestion, nasal itch, rhinorrhea and sneezing. This symptoms aren't dangerous to health but can be uncomfortable.

Allergic rhinitis reduces quality of life, school and work performance [24]. There are reports, which show relation between allergic rhinitis and mood disorders, anxiety disorders and suicidal ideation [25]. Other than impact of symptoms on the somatic and mental spheres, the economic effects are significant. In TOTAL study in Swedish population the coasts of allergic rhinitis were appraised. Total cost was estimated at €1.3 billion annually. Individual cost poses €961.1/year, and 70% of this cost is due to presenteeism [26]. Juniper and Guyatt implemented Rhinoconjunctivitis Quality of Life Questionnaire in 1991. It was the first instrument, which measures functional problems (physical, emotional, social and occupational) that are most troublesome with rhinoconjunctivitis (allergic and non-allergic) [27]. Last years' mobile technology has been used to appraise allergic rhinitis control. Use of a mobile engagement platform can have a significant impact on quality of life in allergic rhinitis. With mobile application patients can communicate with their physician. This method enables record health status and medication compliance. Improvements were seen in domains related to activity, productivity, perception of disease, and emotion [28].

A growing number of studies show an association between allergic rhinitis with mood disorders.

In group with AR risk of occurring depression mood and suicidal ideation is much higher than in the control group [29]. An inflammatory process conduces to sickness behaviour, such as fatigue, anhedonia, loss of appetite, and social withdrawal or loss of interest in social activities [30]. In Korean population-based, nationwide cross-sectional study, AR and/or rhinosinusitis showed a negative impact on quality of life measured EQ-5D questionnaire [29]. Bedolla-Barajas et al [31] in their study estimated that the risk of suicidal thoughts in people with AR reached 11.7% (in the general population the prevalence of this phenomenon was 9.2% [32]), however, when compared with the control group, no correlation was found between AR and the presence of suicidal thoughts. Munoz-Cano et al. [33] assesses, other than depression and anxiety with HAD score quality of sleep. Sleep disturbance (more somnolence, apnea snoring) was reported by group with seasonal AR during pollen season. 41,5% had a suboptimal sleep during the season and 30% out of the season. Perennial symptoms group had a quality of sleep similar to asymptomatic individuals, and they only scored higher in the dimension "sleep shortness of breath". In both groups quality of life was worse but more effected during pollen season for seasonal symptoms group.

The study which is part of the Chronic Rhinosinusitis Epidemiology Study (CRES) showed that patients with chronic rhinosinusitis have significantly higher incidence of depression and anxiety than controls. The mental health domains of the SF-36 was significantly lower in rhinosinusitis group [34].

## ATOPIC DERMATITIS SYNDROME

Atopic dermatitis (AD) is a common and inflammatory dermatological disorder effects children and adults, marked by itch and inflamed skin. According to reports, people suffering from AD may constitute about 7% among adults [34] and 13% among schoolchildren [35]. Avoiding situations that increase the symptoms of the disease, scratching and sleep loss are central hypothesized mechanisms that cause reduced quality of life [36]. Moreover AD is associated with multiple comorbid allergic [38], mental health [39], infectious and cardiovascular comorbidities [37]. Research suggests that also children affected by AD are at increased risk of behavioural difficulties, which may be associated with increased disease severity and impaired quality of life [40]. Even the influence of cognitive behavioural therapy on the quality of life of AD patients was investigated. The results showed meaningful baseline to post treatment improvements on self-reported measures of AD symptoms and general anxiety, but there was no significant improvement in depression or quality of life [36].

There is a significant relationship between quality of life in AD and mental disorders. Problems in the domains of daily activity, the occurrence of pain and discomfort associated with symptoms of the disease, the presence of depressive and anxiety disorders and sleep disorders that worsen the quality of life and professional activity are reported among patients burdened with AD [41,42]. Therefore, patients reported poorer quality of life (HRQoL) in both the physical (PCS) and mental (MCS) domains [42]. Unfortunately, anxiety and depression disorders often remain undiagnosed in adult patients [43].

In Poland QOL (quality of life) assessments are not standardized in atopic dermatitis (AD). Attempts were made to validate of Short-Form 12 (SF-12), a generic QOL assessment in AD and compare its measurement properties with Dermatology Life Quality Index (DLQI). In conclusion, SF-12 MCS and SF-6D showed good validity in AD, but inferior construct validity than DLQI [43].

As mentioned earlier, the sleep disorder has a major impact on the quality of life of AD patients. Itch related to AD has a substantial association with insomnia and sleep quality, and acts as a crucial subjective symptom in these chronic, inflammatory skin diseases [44]. It was previously suggested that itch-related sleep impairment could be an important mediator of the association between itch severity and psychological and somatic symptoms [45].

Based on numerous studies conducted in recent years related to the quality of life of patients with AD and the impact of the mental state of these patients on the course of treatment, it can be concluded that the problem remains significant and requires further analysis.

## CONCLUSIONS

The reduction of emotional disorders and the related improvement in social functioning should be an important element in the treatment of chronic diseases, and such include allergic diseases. In the case of persistent disturbed social functioning of chronic patients, we cannot speak of properly controlled disease or remission. Worse mental functioning of the patient may additionally worsen the somatic state. In addition, the inclusion of constitutional elements of the patient's psyche, which additionally predispose to the development of a specific mental disorder, may allow better control of the symptoms of the disease. On the other hand, assessing and improving the quality of life of patients increases the likelihood of improvement in the effectiveness of antiallergic treatment.

Holistic assessment enables adequate pharmacotherapy and, if necessary, appropriate non-pharmacological interventions. This approach, apart from improving the quality of life, can contribute to reducing the costs associated with treatment and reduced productivity in professional life.

## REFERENCES


1. Thomsen SF. Epidemiology and natural history of atopic diseases. Eur Clin Respir J (online) 2015 Mar 24; 2. https://www.tandfonline.com/doi/full/10.3402/ecrj.v2.24642
2. Wnuk M, Marcinkowski JT. Jakość życia jako pojęcie pluralistyczne o charakterze interdyscyplinarnym. Probl Hig Epidemiol. 2012;93(1): 21-26.
3. Harvey Schipper MD F. Quality of Life. J Psychosoc Oncol. 1990;8:171-185.
4. Trzebiatowski J. Jakość życia w perspektywie nauk społecznych i medycznych – systematyzacja ujęć definicyjnych. Hyg Publ Health 2011;46: 25-31.
5. Tzeng NS, Chang HA, Chung CH et al. Increased Risk of Psychiatric Disorders in Allergic Diseases: A Nationwide, Population-Based, Cohort Study. Front Psychiatry. 2018;9: 133. doi: 10.3389/fpsyt.2018.00133.
6. Ruby Pawankar, Stephen T. Holgate, Giorgio Walter Canonica et al. White Book on Allergy. Milwaukee: World Allergy Organization, 2011.
7. Velichko VI, Bazhora YI, Danilchuk GO et al. Psychoemotic features, status of cognitive functions and assessment of bronchial asthma patients' quality of life. Wiad Lek 2019;72:657-663.
8. Belachew SA, Erku DA, Yimenu DK et al. Assessment of predictors for acute asthma attack in asthmatic patients visiting an Ethiopian hospital: are the potential factors still a threat? Asthma Res Pract. 2018; 4. doi: 10.1186/s40733-018-0044-7.
9. Oh H, Stickley A, Singh F et al. Self-reported asthma diagnosis and mental health: Findings from the Collaborative Psychiatric Epidemiology Surveys. Psychiatry Res. 2019;271: 721–5.
10. Veenendaal M, Westerik JAM, van den Bemt L et al. Age- and sex-specific prevalence of chronic comorbidity in adult patients with asthma: A real-life study. NPJ Prim Care Respir Med 2019;29:14.
11. Thomas M, Bruton A, Moffat M et al. Asthma and psychological dysfunction. Prim Care Respir J 2011;20: 250-56.
12. Geraldo José Cunha Â, Zbonik Mendes A, Dias Wanderley de Carvalho F et al. The impact of asthma on quality of life and anxiety: a pilot study. J Asthma 2019;56:680-5.
13. Juniper EF, Guyatt GH, Epstein RS et al. Evaluation of impairment of health related quality of life in asthma: development of a questionnaire for use in clinical trials. Thorax 1992;47:76-83.
14. Meads DM, McKenna SP, Doward LC et al. Development and validation of the Asthma Life Impact Scale (ALIS). Respir Med. 2010;104:633-43.
15. Sundh J, Wireklint P, Hasselgren M et al. Health-related quality of life in asthma patients – A comparison of two cohorts from 2005 and 2015. Respir Med. 2017;132:154-60.

16. Galić K, Dodaj A, Ćorluka-Čerkez V et al. Study of depression and anxiety in patients with asthma and chronic obstructive pulmonary disease. Psychiatr Danub 2019; 31: 112–7.
17. Kelly K, Ratliff S, Mezuk B. Allergies, asthma, and psychopathology in a nationally-representative US sample.J Affect Disord 2019; 251: 130–5.
18. Paine NJ, Joseph MF, Bacon SL et al. Association Between Depression, Lung Function, and Inflammatory Markers in Patients with Asthma and Occupational Asthma. J Occup Environ Med 2019;61:453-60.
19. Hennegrave F, Le Rouzic O, Fry S et al. Factors associated with daily life physical activity in patients with asthma. Health Sci Rep 2018;1:84.
20. Alsaid-Habia T, McLeish AC, Kraemer KM. Associations between distress tolerance and asthma symptoms and quality of life.J Asthma 2018;1-8.
21. Vargas PA, Robles E. Asthma and allergy as risk factors for suicidal behavior among young adults. Am Coll Health 2019;67:97-112.
22. Al-Habboo DJ, Sultan KO, Najim Z et al. Psychiatric Manifestation of Patients with Bronchial Asthma in Mosul, Iraq. Psychiatr Danub 2017;29:649-51.
23. Dykewicz MS, Hamilos DL. Rhinitis and sinusitis. J Allergy Clin Immunol 2010;125:103-115.
24. Brożek JL, Bousquet J, Agache I et al. Allergic Rhinitis and its Impact on Asthma (ARIA) guidelines-2016 revision. J Allergy Clin Immunol 2017;140:950-8.
25. Oh H, Koyanagi A, DeVylder JE, Stickley A. Seasonal Allergies and Psychiatric Disorders in the United States. Int J Environ Res Public Health 2018 08;15. doi: 10.3390/ijerph15091965.
26. Cardell L-O, Olsson P, Andersson M, et al. TOTALL: high cost of allergic rhinitis—a national Swedish population-based questionnaire study. NPJ Prim Care Respir Med 2016;26:15082.
27. Juniper EF, Guyatt GH. Development and testing of a new measure of health status for clinical trials in rhinoconjunctivitis. Clin Exp Allergy 1991;21:77-83.
28. Cingi C, Yorgancioglu A, Cingi CC et al. The "physician on call patient engagement trial" (POPET): measuring the impact of a mobile patient engagement application on health outcomes and quality of life in allergic rhinitis and asthma patients.Int Forum Allergy Rhinol 2015; 5: 487–97.
29. Shin J-H, Roh D, Lee D-H et al. Allergic rhinitis and rhinosinusitis synergistically compromise the mental health and health-related quality of life of Korean adults: A nationwide population-based survey. PLoS One 2018 Jan 11; 13. doi: 10.1371/journal.pone.0191115.
30. Vargas PA, Bucko A, Robles E et al. The link between Allergic disease and depression in young adults: A structural equation modelling analysis. Arch Depress Anxiety 2018;4:40–55 doi:10.17352/2455-5460.000033.
31. Bedolla-Barajas M, Pulido-Guillén NA, Vivar-Aburto B et al. Is suicidal ideation associated with allergic asthma and allergic rhinitis? J Bras Pneumol 2018;44:31-5.
32. Muñoz-Cano R, Ribó P, Araujo G et al. Severity of allergic rhinitis impacts sleep and anxiety: results from a large Spanish cohort. Clin Transl Allergy 2018;8. doi: 10.1186/s13601-018-0212-0.
33. Erskine SE, Hopkins C, Clark A, Anari S et al. Chronic rhinosinusitis and mood disturbance.Rhinology 2017;55:113-9.
34. Hua T, Silverberg JI. Atopic dermatitis in US adults: Epidemiology, association with marital status, and atopy. Ann Allergy Asthma Immunol 2018;121:622–4.
35. Shaw TE, Currie GP, Koudelka CW et al. Eczema prevalence in the United States: data from the 2003 National Survey of Children's Health. J Invest Dermatol 2011;131:67-73.
36. Hedman-Lagerlöf E, Bergman A, Lindefors N et al. Exposure-based cognitive behavior therapy for atopic dermatitis: an open trial.Cogn Behav Ther 2019;48:300-10.
37. Silverberg JI, Greenland P. Eczema and cardiovascular risk factors in 2 US adult population studies. J Allergy Clin Immunol 2015;135:721-728.
38. Silverberg JI, Hanifin JM. Adult eczema prevalence and associations with asthma and other health and demographic factors: a US population-based study. J Allergy Clin Immunol 2013;132:1132-8.
39. Rønnstad ATM, Halling-Overgaard A-S, Hamann CR et al. Association of atopic dermatitis with depression, anxiety, and suicidal ideation in children and adults: A systematic review and meta-analysis. J Am Acad Dermatol 2018;79:448-456.
40. Cheng C-M, Hsu J-W, Huang K-L et al. Risk of developing major depressive disorder and anxiety disorders among adolescents and adults with atopic dermatitis: a nationwide longitudinal study. J Affect Disord 2015;178:60-5.
41. Villeneuve S, Gadkari A, Blackburn S et al. Disease Severity and Control in Adults with a History of Moderate to Severe Atopic Dermatitis: Results from a Large Patient-Physician Survey in the United Kingdom, Germany, and France.Value in Health 2016;19:A596.
42. Eckert L, Gupta S, Amand C et al. Impact of atopic dermatitis on health-related quality of life and productivity in adults in the United States: An analysis using the National Health and Wellness Survey. J Am Acad Dermatol 2017;77:274-279.
43. Silverberg JI, Gelfand JM, Margolis DJ et al. Symptoms and diagnosis of anxiety and depression in atopic dermatitis in U.S. adults. Br J Dermatol 2019;181:554-65.
44. Kaaz K, Szepietowski JC, Matusiak Ł. Influence of Itch and Pain on Sleep Quality in Atopic Dermatitis and Psoriasis. Acta Derm Venereol 2019;99:175-80.
45. Zachariae R, Lei U, Haedersdal M et al. Itch severity and quality of life in patients with pruritus: preliminary validity of a Danish adaptation of the itch severity scale Acta Derm Venereol 2012;92:508-14.

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