The Relationship of Asthma Control with Body Sensation and Symptom Expression in Asthma Patients

Astım Hastalarında Astım Kontrolünün Beden Algısı ve Semptom İfadesi ile İlişkisi

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ABSTRACT

Objective: Asthma is a chronic disease characterized by persistent airway inflammation, even though symptoms appear episodically. Chronic inflammation in the airways leads to bronchial obstruction, edema, remodeling, and mucus hypersecretion. Disease control in asthma patients is evaluated using respiratory function tests and scales. This study investigated the relationship between asthma control and quality of life with excessive body sensation and the adequacy of symptom expression in asthma patients.

Material and Methods: The Asthma Control Test (ACT), SF-36 Quality of Life Scale (SF-36), Body Sensation Questionnaire (BSQ), and Toronto Alexithymia Scale (TAS-20) were administered to patients followed up with a diagnosis of asthma. The study group consisted of outpatients diagnosed with asthma in a stable period. The scales were applied to each patient once during outpatient control, and the relationships among them were investigated.

Results: Sixty patients were included in the study. A significant correlation was found between the Asthma Control Test and SF-36 quality of life scores. An inverse correlation was found between the Body Sensation Questionnaire and the Asthma Control Test (p=0.011, r=–0.327). According to the control of asthma; Body Sensation Questionnaire scores were 14.0±9.07 in full control and 14.40±13.63 in partial control, while it was significantly 21.95±11.07 (p<0.05) in uncontrolled patients. It has been shown that individuals with a high BSQ score use a higher rate of reliever inhalers.

Conclusion: This study demonstrated that exaggerated symptom perception could decrease Asthma Control Test scores and lead to increased medication use. It is necessary to identify new methods and increase objectivity in the evaluation to provide symptom control.

Keywords: Asthma control, body sensations, exaggerated perception.

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ÖZ

Amaç: Kronik bir hastalık olan astımda, semptomlar epizodik olarak görülse de havayolu inflamasyonu süreklidir. Hava yollarındaki inflamasyon; vazokonstriksiyon, ödem, remodeling ve mukus hipersekresyonu ile bronş obstrüksiyonuna neden olur. Astım kontrol testi (AKT), astım kontrol ölçeği (AKÖ) gibi ölçekler ve solunum fonksiyon testleri ile hastalardaki astım kontrolü değerlendirilir. AKT 5 sorudan oluşan, hastanın kendi beyan ettiği solunumsal semptomlara dayanan subjektif bir testtir. Bu çalışmada, astımlı hastalarda astım kontrolü ve yaşam kalitesi ile beden duyumu ve semptom ifade yeterliliği arasındaki ilişki araştırılmıştır.

Gereç ve Yöntemler: Manisa Celal Bayar Üniversitesi Tıp Fakültesi Göğüs Hastalıkları Kliniği'nde astım tanısı ile takip edilen hastalara astım kontrol testi, SF-36 yaşam kalitesi ölçeği, beden duyumları ölçeği ve Toronto aleksitimi ölçeği uygulandı. Ölçekler, her hastaya poliklinik kontrolü sırasında birer kez uygulandı ve birbirleri arasındaki ilişki araştırıldı.

Bulgular: Çalışmaya 60 hasta dahil edilmiştir. Astım kontrol testi ile SF-36 yaşam kalitesi skorları arasında belirgin bir ilişki saptanmıştır. Beden duyumları ölçeği ile astım kontrolü arasında ters korelasyon saptanmıştır (p=0.011, r=–0.327). AKT'ye göre tam kontrolde BDÖ puanları 14.0±9.07, kısmi kontrolde 14.40±13.63 olarak görülmüşken, kontrolsüzlerde 21.95±11.07 (p<0.05) olarak anlamlı saptanmıştır. BDÖ puanı yüksek olan kişilerin daha yüksek oranda kurtarıcı inhaler kullandığı gösterilmiştir. Astım kontrolü ile Toronto aleksitimi ölçeği arasında ise anlamlı bir korelasyon saptanmamıştır (p=0.146, r=–0.190).

Sonuç: Beden Duyumları Ölçeği'nin ve SF-36 testinin ters korele olarak saptanması ile hastalarımızda yaşam kalitesi düştükçe semptomların daha abartılı gözükeceği sonucuna vardık. Bu da bize yaşam kalitesindeki bozulmanın semptomlarda ve korkularda artmaya neden olacağını göstermektedir. Beden duyumları ölçeği ile astım kontrol testi arasında ters korelasyon saptanmıştır. Abartılı semptomların astım kontrol testi puanlarını düşüreceği ve daha çok ilaç kullanımına sebep olabileceği düşünülmüştür. Toronto aleksitimi ölçeği ile astım kontrol testi arasında ilişki saptanmamış olması, aleksitiminin toplumda düşük oranda görülmesi ve örneklem boyutundaki darlığın sebebiyet verdiği düşünülmüştür.

Anahtar kelimeler: Astım kontrolü, beden duyumları, abartılı algı.

INTRODUCTION

Asthma is a heterogeneous disease characterized by chronic airway inflammation associated with airway hypersensitivity to direct or indirect stimuli. It is defined by limited expiratory airflow and respiratory symptoms such as shortness of breath, chest tightness, and cough.[1] Although symptoms are episodic in asthma, airway inflammation is persistent.[2] Restructuring of the airways as a result of inflammation is characteristic of asthma.[3]

The stepwise approach therapy is appropriate in asthma. Initial treatment is started by evaluating the severity of asthma according to clinical complaints and pulmonary function test results. Patients under treatment are evaluated with tests such as the Asthma Control Test (ACT) and Asthma Control Questionnaire (ACQ), and the medication is arranged according to the appropriate step.[4,5] It is important for patients to express themselves correctly and adequately in answering the questions of the ACT. Psychiatric conditions and psychological stress are related to the perception of the disease. Also, somatic complaints may be similar to and confused with asthma symptoms.

It was observed that asthma control was better when the patient was actively involved in the treatment.[6,7] Organic and psychological risk factors of the patient would be well-known when patient-physician cooperation was provided. Many studies have shown that psychological factors are also effective in controlling asthma. Bahçecioğlu et al.[8] investigated the role of disease perception in asthma control and it was shown that disease perception affects asthma. In a study conducted by Lavoie et al.,[9] it was observed that asthma control and quality of life were worse in those with psychiatric disorders compared to those without psychiatric disorders, and in the last week, they had more asthma symptoms and used more bronchodilators. Ritz and colleagues found an increase in shortness of breath and airway resistance in situations that cause acute stress, such as answering boring questions and watching emotional movies.[10]

In this study, we aimed to describe the reflection of the inability to identify emotions on body sensations and its relationship with ACT. This will reveal the relationship between asthma control and body sensation and symptom expression competence. In addition, the examination of quality of life was conducted to investigate the effects of body sensation and expression competence on quality of life.

Since the ACT is a test with the patient's statement, the symptoms may be exaggerated, deflated, or inadequate, leading to the physician's opinion. This situation will complicate asthma control by causing higher or lower doses of medication. In patients under control, asthma symptoms will progress and treatment costs and labor loss will increase.

MATERIAL AND METHODS

In this study, the effect of physical perception on asthma control was investigated in patients undergoing the Asthma Control Test (ACT). In the literature review, no other study addresses this issue in these dimensions.

Patients between 18 and 65 years old who were followed up with the diagnosis of asthma were included in this study. Approval was obtained from our hospital's Ethics Committee for the study (No: 20.478.486). Informed consent form approval was obtained from all patients included in the study. It was planned to determine the physical perception level of the patients for asthma control and correlate them with the ACT.

Study Group and Procedure

Patients currently being followed up in our clinic were noted to have had a positive reversibility test or bronchial provocation test previously. The criteria for inclusion in the study were determined as no recent asthma exacerbation, regular use of medications, and regular doctor follow-up. As the Asthma Control Test (ACT) was affected during routine outpatient application, those who had an asthma exacerbation in the meantime as a result of clinical examination and evaluation were not included in the study. Active smokers were excluded due to impairing treatment effectiveness. Patients with another chronic disease that is not in remission were excluded because they may impair quality of life and physical perception. Patients who did not have the ability to evaluate the truth and had a disability to complete the clinical interview and self-assessment scales in a healthy way were not included in the study. Clinical evaluation of the patients participating in the study and evaluation of the scales were performed by the same physician at the pulmonology outpatient clinic.

Asthma control levels were determined by performing the ACT on the participants who met the criteria. The level of quality of life was aimed to be determined by applying the SF-36. The exaggerated symptom perception was aimed to be determined by applying the Body Sensations Questionnaire (BSQ). By applying the Toronto Alexithymia Scale-20 (TAS-20), it was aimed to determine whether the patients took their symptoms for granted or could not perceive their symptoms. The correlation of these scales with each other was evaluated. The effects of quality of life and symptom perception change on ACT results were investigated.

Sociodemographic Data Form

Patients were questioned in the sociodemographic and clinical information form about age, gender, financial status, level of education, profession, presence of a diagnosis of illness in their own and family history, smoking history, asthma duration, family history of asthma, and the presence of medications used.

Asthma Control Test (ACT)

It is a test comprising 5 questions, with scores ranging from 1 to 5 for each question. The scores related to the answers to each question are noted for evaluation. The sum of these five points constitutes the total score.[6] The Turkish validity and reliability study of the test was conducted by Uysal et al.[11] A total ACT score of 25 indicates full control, a score of 20–25 indicates partial control, and a score of <20 indicates uncontrolled asthma.

Body Sensations Questionnaire (BSQ)

The Turkish version of the BSQ, originally developed by Chambless, will be used.[12,13] It is a 17-item scale with established validity and reliability. Patients assign scores between 1 and 5 for each item. The sum of these points yields an amplification score.[13]

Toronto Alexithymia Scale-20 (TAS-20)

This test measures alexithymia, defined as the difficulty individuals have in recognizing, defining, and expressing their own emotions. It was updated by Bagby et al.[14] in 1994, and the validity and reli-

ability of the Turkish version were established by Güleç et al.[15] In this 20-question test, scores between 1 and 5 are given. A score of 51 and below indicates no alexithymia, a score between 52–60 suggests possible alexithymia, and a score of 61 and above indicates the presence of alexithymia.[15]

SF-36 Quality of Life Questionnaire (SF-36)

The quality of life of the participants in this study was evaluated using the SF-36. The original questionnaire of SF-36, which is one of the general quality of life scales with generic criteria, was developed by Ware and Sherbourne.[16] This scale assesses the quality of life focusing on the physical, social, and mental health components without being specific to a certain age group or disease.[16] The reliability and validity studies for the Turkish version of the SF-36 were conducted by Koçyiğit et al.[17] This scale consists of 36 items and measures 8 dimensions: physical functioning (10 items), social functioning (2 items), role limitations due to physical problems (4 items), role limitations due to emotional problems (3 items), mental health (5 items), energy/vitality (4 items), bodily pain (2 items), and general health perception (5 items). Additionally, there is an item that assesses the perception of health change in the last 12 months, but it is not currently used in the measurement.[16] Apart from the mentioned items, the scale evaluates the last 4 weeks.[18]

Statistical Analysis

In this study, the sample size was calculated as 96 participants with a 10% margin of error and a 95% confidence interval. The data obtained in the study were evaluated statistically using the program "SPSS Statistics 21". As descriptive statistics, frequency, percentage values, median (interval between quartiles), mean, and standard deviation values were determined. For comparisons, Student's t-test was used for numerical variables that fit the normal distribution, and the Mann-Whitney U test was used for numerical variables that did not fit the normal distribution. Comparisons between categorical variables were made with the chi-square test. Comparative correlation analyses (Pearson, Spearman) were used to determine the variables affecting asthma control, and $p<0.05$ was considered statistically significant in statistical analyses.

RESULTS

60 patients were included in the study. It was determined that 38 (63.3%) of the cases were female and 22 (36.7%) were male. 70% of the participants were married and 18.3% were single. 88.3% of the patients had moderate financial conditions. 85% of the patients lived in urban areas. While 15% of the patients were university graduates, 11.7% had no formal education. It was observed that 51.7% of patients used an inhaled corticosteroid and long-acting beta2 agonist combination, while 16.7% used omalizumab in treatment. It was found that 38.3% of the patients had non-asthma comorbid diseases. Sociodemographic data are shown in more detail in Table 1.

According to ACT scores, BSQ scores were 14.0±9.07 in fully controlled patients and 14.40±13.63 in patients with partial control. However, BSQ scores of uncontrolled patients were 21.95±11.07, and this was statistically significant ($p<0.05$). There was no signifi-

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Table 1: Sociodemographic status					
Category	**n**	**%**	**Category**	**n**	**%**
Age			Any chronic health problem		
18–29	8	13.2	Yes	25	41
30–39	15	25	No	35	49
40–49	20	33.2	Smoking history		
50–59	13	22.6	0 P-Y	37	61.7
60–65	4	6	<10 P-Y	11	18.4
Gender			10–19 P-Y	7	11.6
Female	38	63.3	20–29 P-Y	2	1.7
Male	22	37.7	30–39 P-Y	2	3.3
Marital status			>40 P-Y	1	1.7
Single	11	18.3	Asthma duration		
Married	42	70	<5 year	12	20
Divorced/Widow	7	11.7	5–9 year	22	36.7
Residency			10–19 year	16	26.6
City	33	55	20–29 year	4	6.6
Country	18	30	>30 years	4	6.6
Village	9	15	Asthma medication used		
Financial situation			ICS	2	3.3
Good	1	1.7	LTRA	0	0
Medium	53	88.3	ICS+LTRA	3	5
Bad	6	10	ICS+LABA	31	51.7
Educational status			ICS+LABA+LTRA	10	16.7
Uneducated	7	11.7	ICS+LABA+LAMA+LTRA	4	6.7
Low level	33	55	Omaluzimab	10	16.7
Medium level	11	18.3	Family history of asthma		
High level	9	15	Yes	15	25
Occupation			No	45	75
Employed	27	45			
Unemployed	33	55			

ICS: Inhaled corticosteroids, LTRA: Leukotriene receptor antagonists, LABA: Long acting B2 agonist, LAMA: Long acting muscarinic antagonists

cant relationship when ACT subtypes and TAS-20 were compared. In the comparison between BSQ and ACT, an inverse correlation was found (p=0.011, r=–0.327). There was no significant correlation between ACT and TAS-20 (p=0.146, r=–0.190). This is shown in more detail in Table 2.

There was a significant relationship between ACT scoring and SF-36 quality of life scoring. All subtypes of SF-36 showed deterioration as asthma control worsened, as shown in Table 3.

The correlation table of ACT and BSQ with SF-36 is shown in Table 4, and a significant correlation was found. The relationship between BSQ and TAS-20 could not be demonstrated (p=0.132, r=0.197).

Reliever drug use was found to be statistically significantly higher in participants with a high BSQ score. When evaluated with *Post-Hoc* analysis in terms of subtypes that provide statistical significance, it is seen that participants with high BSQ scores use more reliever drugs during the day, as shown in Table 5.

Table 2: Comparison of ACT subtypes scoring with BSQ and TAS-20		
	TAS-20	**BSQ**
ACT full control	52.63±14.2	14±9
ACT partial control	62.7±11.6	14.4±13.6
ACT uncontrolled	58.3±10.8	21.9±11
ACT	p=0,146	p=0.011
	r=–0.190	r=–0.327

Pearson comparative correlation analysis were used to determine the variables affecting asthma control, and p<0.05 was considered statistically significant in statistical analysis. ACT: Asthma Control Test, BSQ: Body Sensation Questionnaire, TAS-20: Toronto Alexithymia Scale

Table 3: Comparison of SF-36 scoring with ACT subtypes

	ACT full control	ACT partial control	ACT uncontrolled	p
SF-36 physical functioning	78.75±23.4	74.0±11.5	47.86±29.47	<0.05
SF-36 physical role functioning	84.38±18.60	50±44.0	47.86±29.47	<0.05
SF-36 emotional role functioning	79.0±35.42	46.5±45.0	35.57±41.18	<0.05
SF-36 vitality	61.87±12.8	46.5±14.34	42.5±20.1	<0.05
SF-36 mental health	67.5±10.12	53.6±19.61	50.57±17.2	<0.05
SF-36 social functioning	65.25±23.91	76.10±23.20	52.38±20.60	<0.05
SF-36 bodily pain	85.0±15.0	70.75±26.51	53.27±24.98	<0.05
SF-36 general health perception	58.13±17.91	46.0±21.18	38.10±20.02	<0.05

Mean values and standard deviation ratios are indicated for comparison of SF-36 scoring with ACT subtypes. SF-36:Short Form-36

Table 4: Comparison of SF-36 quality of life scale with ACT and BSQ

	ACT	BSQ
SF-36 physical functioning	p=<0.001	p=<0.001
	r=0.533	r=−0.547
SF-36 physical role functioning	p=<0.001	p=0.007
	r=0.543	r=−0.345
SF-36 emotional role functioning	p=0.001	p=0.078
	r=0.423	r=−0.229
SF-36 vitality	p=0.013	p=0.016
	r=0.319	r=−0.310
SF-36 mental health	p=0.004	p=0.271
	r=0.367	r=−0.144
SF-36 social functioning	p=0.001	p=0.006
	r=0.416	r=−0.354
SF-36 bodily pain	p=<0.001	p=0.002
	r=0.477	r=−0.400
SF-36 general health perception	p=0.003	p=0.062
	r=0.376	r=−0.242

Pearson comparative correlation analysis were used to determine the variables affecting asthma control, and p<0.05 was considered statistically significant in statistical analysis.

Table 5: Evaluation of the frequency of use of reliver drugs in the last 1 month with the BSQ score: Evaluation of statistical significance with *Post-Hoc*

	Mean±SD	p
Using SABA with BSQ		**p=0.012**
Three or more a day		
1–2 times a day	−2.305±3.965	p=0.993
2–3 times a week	−0.857±3.994	p=1.000
Never	9.011±3.169	**p=0.048**
1–2 times a day		
2–3 times a week	1.447±4.541	p=1.000
Never	11.316±3.836	**p=0.035**
2–3 times a week		
Never	9.868±3.867	p=0.134

SD: Standard deviation, SABA: Short-Acting β2Agonist

DISCUSSION

The Body Sensations Questionnaire (BSQ) is a scale that measures symptoms that develop on the body, such as nausea and palpitations, as a result of emotions like fear and anxiety. Alexithymia is a disorder characterized by the inability to identify and explain emotions. Individuals with alexithymia may have difficulty identifying emotions and related symptoms such as anxiety. In this study, we aimed to describe the impact of the inability to identify emotions on body sensations and its relationship with the Asthma Control Test (ACT). This could reveal the relationship between asthma control and body sensation and symptom expression competence.

With this study, we demonstrated that the ACT, one of the most used scales in asthma follow-ups, is influenced by quality of life and

body perception level. Given the lack of studies on this subject in the literature, our study contributes original insights.

Key aspects in the control of asthma include determining symptom control, compliance with treatment, reducing risk factors, and identifying and addressing comorbid conditions. The Global Strategy for Asthma Management and Prevention (GINA) 2020 updated report recommends some algorithms for determining symptom control.[1] Additionally, there are various scales like the ACT, Asthma Control Questionnaire (ACQ), and Asthma Quality of Life Questionnaire (AQLQ) that are quantitatively used. While each test yields significant results, they also have their limitations. We focused on the ACT due to its practicality.

The ACT is a test that inquires about patients' symptoms and asthma medication use in the last 4 weeks. However, the test cannot ascertain the reality of these symptoms or the necessity of the medications. Patients might perceive their symptoms more exaggeratedly due to different factors, leading to uncertain test results and increased use of reliever medications. Conversely, it is possible that the test might yield incorrect results because symptoms were misunderstood or taken for granted.

In this study, we utilized the Body Sensations Questionnaire (BSQ) and the Toronto Alexithymia Scale-20 (TAS-20) to measure the symptom perceptions of patients diagnosed with asthma. We examined the comparison of these results with the Asthma Control Test (ACT) results and the SF-36 results. The predominance of adult patients in the study population is significant for the effective application of the scales. With 66.7% of patients having a lower education level and a 55% unemployment rate, it suggests that the perception of somatic symptoms and anxiety may be higher. Evaluating patients in terms of medication usage, it was observed that over 90% of them use combined treatments and additional medications. This outcome indicates the necessity to review drug overuse in future studies.

The inverse correlation found between the BSQ and SF-36 in this study indicates that symptoms appear more exaggerated as the quality of life of our patients decreases. This reveals that the determinants of patients' quality of life can also influence disease control, with symptoms being more severe in patients with poorer quality of life. Consequently, the ACT results applied to patients would also be impacted by this situation. We found an inverse correlation between the BSQ and ACT in both total and subtypes. This leads to the conclusion that ACT scores decrease as the perception of symptoms and fears increase, which is central to this study. Reliever medication usage was statistically significantly higher in participants with a high BSQ score, suggesting that asthma control is not achieved, thereby affecting ACT scores.

These results indicate that if the quality of life and symptom perception of our patients are not considered in the ACT, the reliability of the test becomes questionable. As a result of exaggerated symptoms, patients frequently seek hospital care, and the usage of reliever inhalers increases. Furthermore, neglecting the psychosocial aspects of asthma can lead to additional comorbidities due to unnecessary medications, high-dose treatments, and side effects. The quality of life scale we use is crucial in this respect.

Asthma, from another perspective, predominantly impacts patients organically but also significantly impairs their quality of life. This study found that only 14% of participants were fully controlled, indicating that with most patients' ACT scores not in full control, further research is needed to ascertain whether differences in physical perception decrease the ACT score or a decrease in asthma control heightens symptom perception and fears in patients.

In this study, no relationship was found between the Toronto Alexithymia Scale-20 (TAS-20) and the Asthma Control Test (ACT). In a study by Khosravani et al.[19] involving 300 participants, it was demonstrated that the alexithymia subscales of TAS-20 had no direct effect on physical symptoms. However, the difficulty in identifying emotions (DIF) subscale of TAS-20 was associated with emotional empathy and negative affect, both of which were significantly related to physical symptoms. It was suggested that the affective subscale of alexithymia in TAS-20, namely DIF, may indirectly affect physical symptoms through affective empathy and negative affect. Innamorati et al.[20] found that alexithymia was associated with more doubts about one's own beliefs and depression in asthma patients with severe respiratory problems, indicating that interventions improving alexithymia and insight in patients may enhance asthma control perception, reduce exacerbation risk, and promote more adaptive coping strategies.

Considering the prevalence of alexithymia in previous studies, the low sample size in this study could be attributed to the prevalence of alexithymia, which ranges between 6.8% and 18.8% in the population. Although our study yielded similar results, larger samples and subtype studies are required for more definitive conclusions.

In research by Chetta et al.,[21] asthmatics with high symptom perception were found to be more likely to use more medication, thereby increasing the risk of side effects and higher health expenditures. Conversely, asthmatics with low symptom perception had a higher risk of untreated disease and acute life-threatening attacks. Another study by Calfee et al.,[22] which conducted an Asthma Control Perception Questionnaire (ACPQ) post-discharge from 865 asthmatic patients hospitalized, showed that those with high control perception had better health conditions, higher quality of life, and lower rates of emergency admission and hospitalization. These studies, similar to the findings of this study, suggest that considering the psychosocial aspects of patients through various questionnaires and scores may yield more reliable results.

The coexistence of asthma with numerous psychiatric diseases is well-documented.[23] By excluding patients with psychiatric disorders, this study aimed to prevent the influence of psychiatric conditions on the results. Selecting patients in remission from chronic diseases that may accompany asthma was intended to minimize the impact of comorbidities that could mimic asthma symptoms. However, these chronic conditions could also diminish the quality of life of our patients, potentially affecting SF-36 results. Additionally, participants not always recalling their medication doses hindered the determination of patients using high-dose medications. These factors represent both the strengths and limitations of this study, indicating the need for more comprehensive future research.

CONCLUSIONS

The Asthma Control Test (ACT) should not be relied upon exclusively to assess asthma control. Our clinical experience demonstrates that a multifaceted evaluation of our patients can lead to reduced overuse of medication, thereby minimizing side effects and health expenditures. By considering the psychosocial aspects of our patients, we can attain more dependable outcomes. It is essential to explore new methods for achieving symptom control, and further research in this area is warranted.

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REFERENCES

1. Global Initiative for Asthma. Global strategy for asthma management and prevention. (Updated 2020). Available at: https://ginasthma.org/wp-content/uploads/2020/04/GINA-2020-full-report_-final-_wms.pdf. Accessed Jan 26, 2024.

2. Bousquet J, Jeffery PK, Busse WW, Johnson M, Vignola AM. Asthma. From bronchoconstriction to airways inflammation and remodeling. Am J Respir Crit Care Med 2000;161:1720–45.

3. Kokturk N, Tatlicioglu T, Memis L, Akyurek N, Akyol G. Expression of transforming growth factor beta1 in bronchial biopsies in asthma and COPD. J Asthma 2003;40:887–93.

4. Nathan RA, Sorkness CA, Kosinski M, Schatz M, Li JT, Marcus P, et al. Development of the asthma control test: A survey for assessing asthma control. J Allergy Clin Immunol 2004;113:59–65.

5. Juniper EF, Bousquet J, Abetz L, Bateman ED; GOAL Committee. Identifying 'well-controlled' and 'not well-controlled' asthma using the Asthma Control Questionnaire. Respir Med 2006;100:616–21.

6. Kohler CL, Davies SL, Bailey WC. How to implement an asthma education program. Clin Chest Med 1995;16:557–65.

7. Coté J, Cartier A, Robichaud P, Boutin H, Malo JL, Rouleau M, et al. Influence on asthma morbidity of asthma education programs based on self-management plans following treatment optimization. Am J Respir Crit Care Med 1997;155:1509–14.

8. Bahçecioğlu G, Çevik Akyl R. Determination of effect on asthma control of illness perception of asthma patients. Acta Medica Mediterr 2014;30:591–600.

9. Lavoie KL, Cartier A, Labrecque M, Bacon SL, Lemière C, Malo JL, et al. Are psychiatric disorders associated with worse asthma control and quality of life in asthma patients? Respir Med 2005;99:1249–57.

10. Ritz T, Steptoe A, DeWilde S, Costa M. Emotions and stress increase respiratory resistance in asthma. Psychosom Med 2000;62:401–12.

11. Uysal MA, Mungan D, Yorgancioglu A, Yildiz F, Akgun M, Gemicioglu B, et al. The validation of the Turkish version of Asthma Control Test. Qual Life Res 2013;22:1773–9.

12. Chambless DL, Caputo GC, Bright P, Gallagher R. Assessment of fear of fear in agoraphobics: The body sensations questionnaire and the agoraphobic cognitions questionnaire. J Consult Clin Psychol 1984;52:1090–7.

13. Kart A, Türkçapar MH. Beden duyumları ölçegi'nin Türkçe uyarlaması, geçerlilik ve güvenilirliği. Bilişsel Davranışçı Psikoterapi Araşt Derg 2014;3:18–22.

14. Bagby RM, Taylor GJ, Parker JD. The Twenty-item Toronto Alexithymia Scale--II. Convergent, discriminant, and concurrent validity. J Psychosom Res 1994;38:33–40.

15. Güleç H, Kose S, Yazıcı Güleç M, Çıtak S, Evren C, Borckardt J, et al. Reliability and factorial validity of the Turkish version of the 20-item Toronto alexithymia scale (TAS-20). Psychiatr Clin Psychopharmacol 2009;19:214–20.

16. Ware JE Jr, Sherbourne CD. The MOS 36-item short-form health survey (SF-36). I. Conceptual framework and item selection. Med Care 1992;30:473–83.

17. Koçyiğit H, Aydemir Ö, Fişek G, Ölmez N, Memiş Kısa A. Form-36 (KF-36)'nın Türkçe versiyonunun güvenilirliği ve geçerliliği: Romatizmal hastalığı olan bir grup hasta ile çalışma. İlac ve Tedavi Derg 1999;12:102–6.

18. Keller SD, Bayliss MS, Ware JE Jr, Hsu MA, Damiano AM, Goss TF. Comparison of responses to SF-36 Health Survey questions with one-week and four-week recall periods. Health Serv Res 1997;32:367–84.

19. Khosravani V, Samimi Ardestani SM, Alvani A, Amirinezhad A. Alexithymia, empathy, negative affect and physical symptoms in patients with asthma. Clin Psychol Psychother 2020;27:736–48.

20. Innamorati M, Chetta A, Antonucci C, Bettini E, Aiello M, Montali A, et al. Alexithymia and self-reflectiveness in bronchial asthma. Riv Psichiatr 2015;50:245–52.

21. Chetta A, Foresi A, Marangio E, Olivieri D. Psychological implications of respiratory health and disease. Respiration 2005;72:210–5.

22. Calfee CS, Katz PP, Yelin EH, Iribarren C, Eisner MD. The influence of perceived control of asthma on health outcomes. Chest 2006;130:1312–8.

23. Adams RJ, Wilson DH, Taylor AW, Daly A, Tursan d'Espaignet E, Dal Grande E, et al. Psychological factors and asthma quality of life: A population based study. Thorax 2004;59:930–5.