

Original article

A breath for health: an exploratory study in severe asthma patients in Turkey

Background: Severe asthma puts enormous burden on patients. To evaluate asthma-related restrictions on patients' daily lives along with their expectations about future asthma care.

Methods: A structured questionnaire was administered to severe asthma patients at 25 centers across Turkey. The patients were divided into; uncontrolled (n : 274) and controlled asthma (n : 177) according to the existence of symptoms despite the GINA step 4 or 5 treatment.

Results: A total of 451 patients (F/M: 337/114, mean age: 47.6 ± 13.2 years) were included; 93% were nonsmokers and 51.2% were atopic. Chronic rhinosinusitis, ASA/NSAID sensitivity, and osteoporosis were significantly higher in uncontrolled patients. Nearly 70% of the uncontrolled asthmatics defined asthma as disturbing with significant restrictions in daily life. The most important role for medication was symptom relief. One inhaler or one tablet a month was the most preferred form of drug usage. In addition, 30.6% of the patients had tried alternative treatment with herbal remedies. Although patients were willing to become members of an asthma association, they expected the Turkish government to provide special asthma clinics and fund research into new treatments. Controlled patients achieved or were close to achieving asthma control goals. Uncontrolled patients seemed to be more pessimistic in this respect, but they reserved significant levels of hope for the future. Two-thirds of all the patients thought that they would receive better treatment in the next 5 years.

Conclusions: In this study group, severe asthma patients face significant limitations in their daily lives, but they are optimistic about better asthma control and treatment options in the future.

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Key words: limitations of asthma; patients' opinion; patient's perspective; severe asthma.

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Bronchial asthma is a common chronic disease in industrialized countries and leads to substantial social and economic problems (1, 2). International and national asthma guidelines have been prepared to present correct treatment approaches to these patients and thus provide optimum control of the disease (3–5). Despite the presence of these guidelines and effective medications, recently conducted, a number of surveys have consistently demonstrated a low level of disease control among asthma patients (6–8).

Uncontrolled asthma not only results in increases in health care-related cost but also impairment in the social, personal, and emotional lives of patients. (9). Although many studies were conducted to evaluate asthma control and the cost of the disease to health care systems, the impact of the disease on the lives of asthma patients has not gained much attention. Recently, the European Federation of Allergy and Airways Disease Patients' Association (EFA) commissioned a telephone survey in five European countries to capture the views of the people

who have severe asthma. Most patients reported on having marked limitations in their daily lives such as restrictions in physical activity, having pets, taking holidays (10).

Although severe asthma affects a small percentage (approximately <10%) of the asthma population, it is a frustrating disease for both patients and the physicians treating them. The control of severe asthma is difficult; patients take a high dosage of inhaled or oral steroids and they are at a high risk of exacerbations, hospitalizations, and death. They often live with severely impaired quality of life. Moreover, these patients account for a substantial portion of health care costs (11).

The prevalence of physician diagnosed-asthma is approximately 3–5% among adult population in Turkey, although prevalence of current asthma symptoms is higher and even comparable with European countries (12, 13). Majority of the patients have mild to moderate persistent asthma and only 7% of the subjects have severe asthma (14). However, the direct cost of these patients is

two to four times higher than that of moderate and mild asthma patients, respectively (15). Although the national asthma management guideline has been used in asthma practice since 1995, the recently published AIRET survey reports a low level of asthma control in urban Turkish population (16). Unfortunately, in Turkey, there is no professional national organization for people with asthma. Therefore, as asthma specialists, we aimed to assess the impact of severe asthma on patients' daily lives, and their views about asthma medications along with their expectations about future asthma care. We used the questions of EFA survey, but unlike the EFA study, we performed face-to-face interviews via asthma specialists instead of telephone conversations. Moreover, we evaluated patients in two groups; uncontrolled severe and controlled severe asthma patients and compared data between the two groups.

Materials and methods

Study design

The study is a cross-sectional national multicenter survey that aims to compare the sociodemographic features, restrictions on daily life, and patient views regarding the management of the disease in adult patients with controlled and uncontrolled severe asthma. Twenty-five centers, out of which a great majority was academic centers, from 17 different cities throughout the country participated in the study.

Subjects

We sent the questionnaire to 25 study centers via mail and asked them to complete the questionnaire for each of their patients with severe asthma either under control or not. Subjects were then selected among severe asthma patients who were able to understand the questionnaire. The patients were regularly visiting their physicians and were on health care coverage. Specialists in pulmonology and/or allergy diagnosed all patients as having severe asthma. All patients were on GINA step 4 or 5 treatment including high-dose inhaled steroids, long-acting beta-2 agonist, leukotriene receptor antagonist, theophylline, oral beta-2 agonist, and oral steroids. The patients were classified as uncontrolled severe asthma if they met one or more of the following criteria; (a) sleep disturbance once a week or more in the preceding year, (b) a wheezing attack once a week or more in the preceding year, and (c) one or more speech limiting attack in the preceding year. Otherwise, they were classified as controlled severe asthma patients.

The Turkish translation of the EFA asthma questionnaire (10) was used to assess the patient opinions about the quality of life, clinical course and treatment success, and their future expectations of the disease (Appendix 2). Additional items about alternative medicine usage and asthma education were also included. Their accompanying atopic condition was also evaluated. The respondents were assured of the voluntary nature of the survey and the confidentiality of their responses, and all gave informed consent.

Atopy diagnosis

In the diagnosis of atopy, skin prick test, serum specific immunoglobulin E (IgE) level, and personal history were used. Allergen

extracts along with appropriate positive (histamine: 10 mg/ml) and negative (saline) controls were applied on the forearm using the prick technique. Prick test response to common aeroallergens (a wheal size ≥ 3 mm); *Dermatophagoides pteronyssinus*, *D. farinae*, a mixture of grass pollens, a mixture of weed pollens, a mixture of tree pollens, a mixture of cereal pollens, a mixture of molds, and animal epithelia (cat and dog) was considered positive.

Statistical analysis

The data were expressed as mean $\pm$ standard deviation or percentage of patients who answered the questions. Statistical comparisons between controlled and uncontrolled patients performed by Pearson's chi-square, Fisher's exact test, Mantel-Haenszel test, Student's *t*-test, or Mann-Whitney *U*-test where appropriate. $P < 0.05$ was considered to be the level of statistical significance.

Results

Demographics

A total of 451 patients with severe asthma were included in the study via structured face-to-face interviews conducted between June 2006 and January 2007. Controlled severe asthma patients consisted of 39% ($n = 177$) and uncontrolled severe asthma patients consisted of 61% ($n = 274$) of the total population. Baseline demographic findings and clinical characteristics of the study group are shown in Table 1. Mean age of patients was 47.6 ± 13.2 years with a female predominance. The majority of both groups were below high school level (68.6% vs 59.9% of uncontrolled and controlled patients, respectively). The order of occupational distribution was similar in both groups. A great majority of asthma patients was nonsmokers and only very few of them smoke more than ten cigarettes a day (2.2% and 1.7% in uncontrolled and controlled patients, respectively). The accompanying disorders were almost similar, except that chronic sinusitis, nasal polyp, and osteoporosis prevalence were significantly higher in uncontrolled patients.

Half of the patients (51.2%) with no significant difference between groups were defined as atopic according to the positivity in the history and/or skin prick test and/or specific IgE. When the description of atopy was limited to skin test positivity only, atopy rates were 31.02% vs 32.2% for uncontrolled and controlled group, respectively. Among the atopic groups, 59.4% vs 64.8% of uncontrolled and controlled patients, respectively, were diagnosed with only skin test positivity.

Asthma duration, symptoms and management

There was no significant difference regarding asthma duration between groups (Table 1). For asthma symptoms in the uncontrolled asthma group, the frequency of waking up from sleep more than once a week was reported in 55.1% of the patients, wheezing more than

Table 1. Sociodemographic features and accompanying diseases

	Uncontrolled (n = 267)	Controlled (n = 184)	P-value
Gender (%) male/females	22.6/77.5	29.4/70.6	0.107
Age (years) (mean $\pm$ SD)	47.9 $\pm$ 13.2	47.0 $\pm$ 13.4	0.524
Occupation (%)			
Housewife	60.6	45.8	0.002*
Retired	15.0	19.2	0.237
Full time employee	13.5	18.1	0.187
Part time employee	4.4	9.0	0.045*
Other	6.6	7.9	0.588
Education (%)			
Illiterate	20.1	9.0	0.002*
Primary school	35.8	41.2	0.242
Secondary school	12.8	9.6	0.303
High school	17.2	16.4	0.831
Vocational high school	6.6	7.3	0.751
University + postgraduate	7.7	16.4	0.004
Smoking status (%)			
Nonsmoker	92.7	93.2	0.948
Asthma duration (years) (mean $\pm$ sd)	13.7 $\pm$ 9.7	14.1 $\pm$ 10.2	0.710
Accompanying disorder			
Chronic rhinosinusitis	44.5	34.5	0.034*
Gastroesophageal reflux (GER)	32.5	28.2	0.342
Osteoporosis	20.1	11.9	0.023*
Nasal polyp	17.2	7.3	0.003*
ASA/NSAID sensitivity	14.6	8.5	0.052
Diabetes	13.5	9.0	0.151
Hypertension	11.7	8.5	0.277
Others	11.3	12.4	0.719
None	25.2	32.2	0.105

* $P < 0.05$.

once a week in 73.4%, and speech limiting attack more than once a week in 30.7%. On the contrary, as expected, none of the controlled patients reported that these symptoms occur once a week or more frequently. When the patients in the strata where there is a lower frequency of the symptoms (i.e., once a month, only once, never), the controlled group has significantly higher percentages compared with uncontrolled patients ($P < 0.001$).

Inhaled corticosteroids were the most frequently mentioned drugs used in asthma treatment in both groups, but it was higher in the uncontrolled group (97.8% and 94.9%, respectively; $P = 0.038$). Very few patients were only on systemic steroids. The second-order drugs, chosen for the asthma treatment in uncontrolled and controlled patients, were the long-acting beta-2 agonists (94.9% and 92.1%, respectively), followed by leukotriene antagonists (60.6% vs 53.7%) and short-acting beta-2 agonists (30.3% vs 26.6%). The use of theophylline derivatives (33.9% vs 15.8%; $P < 0.001$), inhaled anticholinergics (21.2% vs 9.6%; $P = 0.001$), and oral corticosteroids (18.2% vs 4.5%; $P < 0.001$) were higher in the uncontrolled group.

Places avoided by the patients

Roughly, half of the uncontrolled patients claimed that they avoided buses and café-restaurants, which was a significantly higher percentage than in the controlled group ($P < 0.001$ and $P = 0.006$, respectively). Uncontrolled asthma patients were also more likely to avoid other public places such as shopping malls, shops, cinema, trains, wedding saloons, taxis, and street bazaars when compared with controlled patients ($0.001 < P < 0.032$) of the same order from the most to the least. However, the tendency for avoiding smoking contact was more frequent among controlled asthma patients ($P = 0.047$).

Patients' perception of asthma and its management

Asthma definition and restrictions. Negative thoughts concerning asthma were more exaggerated, and the restriction of daily physical and social activities were more clear in uncontrolled patients compared with patients having controlled asthma ($P < 0.05$), except having pets, success at study, and joining in a school or college (Fig. 1A and B).

Priorities regarding asthma medication use. Taking asthma medications as prescribed was of top priority in all patients, but especially in the controlled group (39.4% vs 48.0%; $P = 0.042$). Getting the quickest benefit was the most important aspect for 23.0% of uncontrolled group vs 11.3% of the controlled group ($P = 0.002$), whereas a higher percentage of controlled asthma patients compared with uncontrolled stated that they regard number of medications as the most important aspect (15.3% vs 7.7%; $P = 0.011$). The long-duration benefit was the most important aspect for 18.1% of uncontrolled vs 13.6% of controlled patients ($P > 0.05$). Although side-effect minimization and taking the medication at a convenient time or place were not the major concern for most patients, a few patients in both groups gave a priority to these issues also.

The most important properties regarding patients' perception about asthma medication/management. When patients were asked to score the management of asthma from 1 (the least important) to 10 (the most important), the highest score given by uncontrolled patients was 9.3 ± 1.4 out of 10 for 'better access to asthma specialist when needed/required', followed by 8.7 ± 2.0 for 'how quickly it stops my symptoms', 8.7 ± 2.1 for 'new, more effective medicines', and 8.7 ± 2.0 for 'how quickly it works'; whereas the lowest score was given for 'taking it in private' (3.5 ± 3.3). On the contrary, very similar mean scores were obtained from controlled group with a similar rank order, and the only significant difference between groups was found for 'taking it in private' ($P = 0.004$), which is slightly higher in uncontrolled patients.

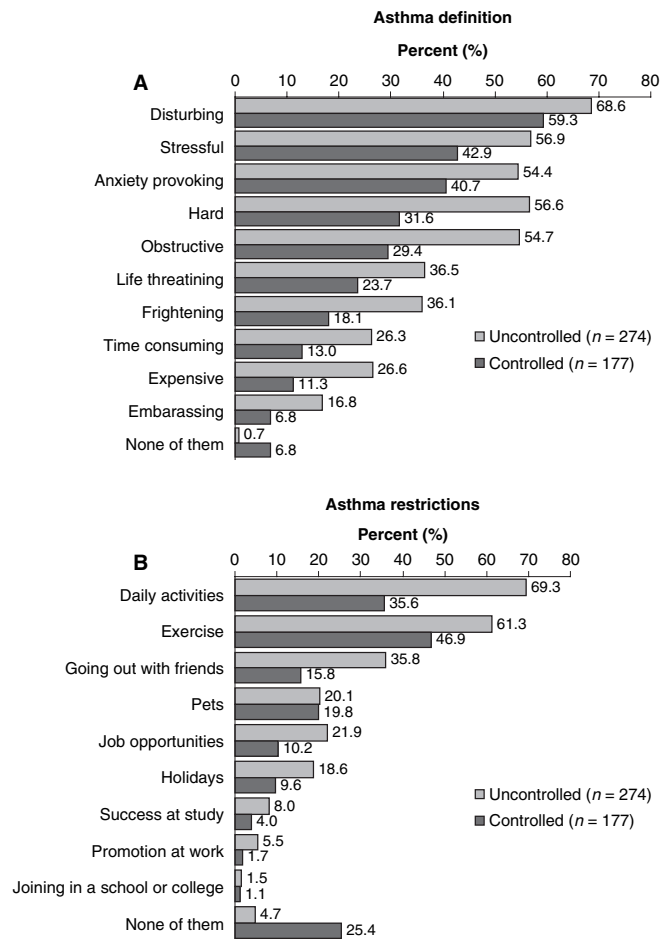


Figure 1. Patients' perception of asthma regarding the disease definition and the restrictions because of asthma. $P < 0.05$ between two groups for all issues except having pets, success at study and joining in a school or college.

Patients' concerns about asthma medication. When the patients were asked to score the types of asthma medication from 1 being the least attractive to 10 the most attractive, an inhaler once a month and a pill once a month were the most attractive treatment choices for both uncontrolled (8.3 ± 2.4 and 8.3 ± 2.6) and controlled (8.5 ± 2.0 and 8.2 ± 2.3) asthma patients. The least preferred choice was an injection once a day (4.4 ± 3.2 by uncontrolled and 3.1 ± 2.6 by controlled). Only one intervention such as operation or implant gained less attention than medications. On the contrary, when patients were asked to score their concern about asthma medication from 1 meaning 'I absolutely do not agree' to 10 meaning 'I absolutely agree', all asthma patients, but especially uncontrolled, were mainly concerned about the possible side-effects of the medications they use (importance scores: 5.4 ± 3.4 and 6.1 ± 3.5 by controlled and uncontrolled patients, respectively; $P = 0.05$). Controlled asthma patients were again less afraid about their medication being ineffective (impor-

tance scores: 3.4 ± 3.1 by controlled vs 4.7 ± 3.6 by uncontrolled patients; $P < 0.001$) and risk of dependence (importance scores: 4.6 ± 3.7 by controlled vs 5.4 ± 3.9 by uncontrolled patients; $P = 0.008$).

Patients' opinion about alternative medicine. Among the participants, 69.4% stated that they never used any alternative methods to treat their asthma. There was no difference in prevalence or in preferred type of alternative medicines among controlled and uncontrolled asthma patients. Although herbal medicines were the most frequently used alternative treatment method (25.3%), some unusual alternative treatment methods, such as quail eggs and turtle blood, had been tried by the patients.

Success of treatment goals

Considering to the success of treatment goals (Fig. 2A), controlled patients stated that they reached or were close to reaching the success, especially with respect to a decreased number of asthma episodes and Emergency Room (ER) visits. These patients maintained their hope regarding achieving the treatment goals in 5 years time, with slight but significant reduction in percentages ($P = 0.023$ and $P = 0.016$, respectively). A similar percentages of controlled patients thought that there are or will be in 5 years time, at or close to, the treatment target regarding the use of quick relief medications, long-term symptom incidence, and restrictions in daily activities.

On the contrary, uncontrolled patients seem to be more pessimistic in this respect compared with controlled group for the present time (Fig. 2B). However, they reserve significant levels of hope for the future with significantly higher percentages for all questions ($P = 0.016$ for ER visits, $P < 0.001$ for others; now vs 5 years later).

In total, 71.0% of all patients stated the expectancy of treatment options for asthma would be better in next 5 years (Fig. 3). Controlled asthma patients, who had already benefited from the drugs, were more optimistic about the future of asthma treatment ($P = 0.004$), whereas higher number of uncontrolled patients declared to be uncertain ($P < 0.001$).

Expectations from the government did not show significant differences between groups. According to uncontrolled asthma patients, the first priority of the government should be to provide clinics working only for the diagnosis and treatment of asthma (37.2%). The priority of controlled patients was the supervision of prohibiting smoking in public places (32.2%), followed by the establishment of special/expert asthma clinics (31.1%). Both groups mentioned the importance of government investment in asthma research for developing new treatments (29.5%).

More than half of the asthma patients (55.0%) had obtained education about asthma. Uncontrolled and

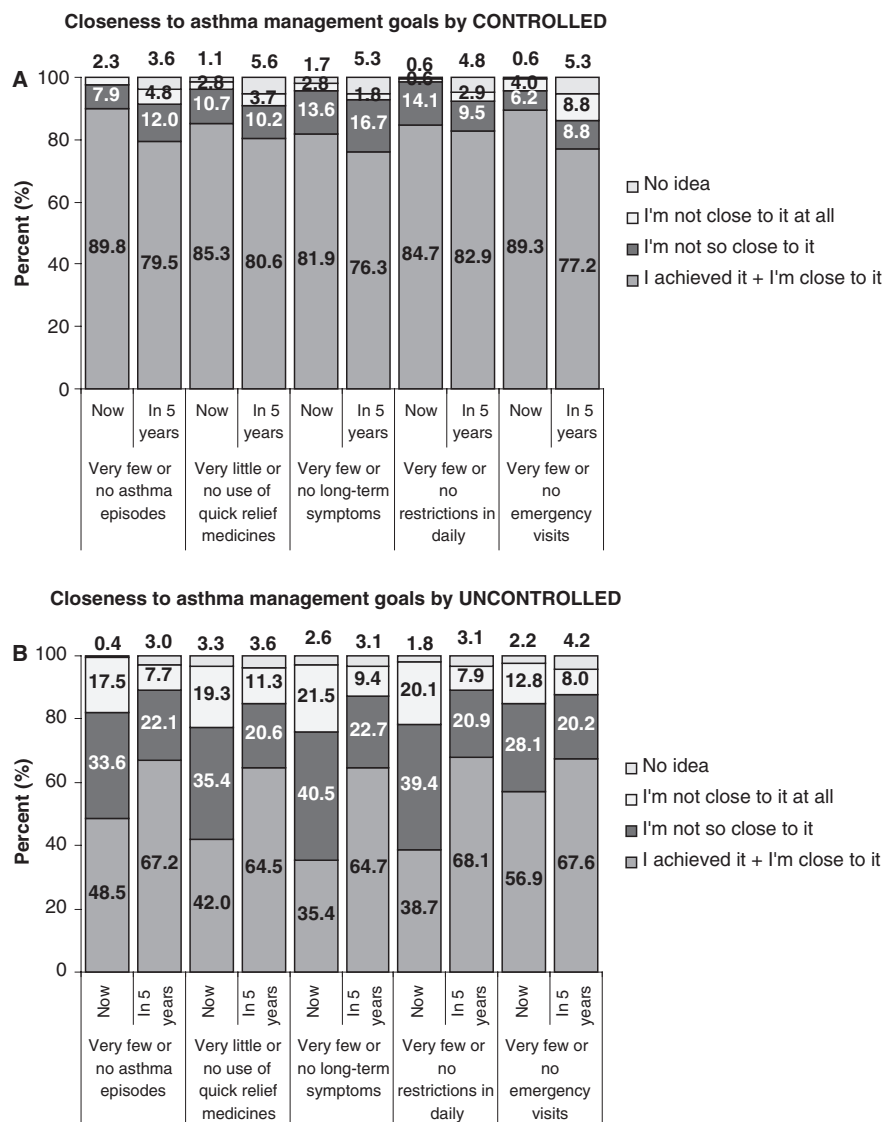


Figure 2. Expectancy of clinical effectiveness by the patients: answers to questions 11 and 12 of the questionnaire regarding asthma episode control, use of quick relief medicines, long-term symptoms, restrictions in daily activities and emergency visits. $P < 0.05$; 'I achieved it + I'm close to it' 'now' vs 'in 5 years': in controlled patients (A), for very few or no asthma episodes and emergency visits; in uncontrolled patients (B), for very few or no asthma episodes, quick relief medication use, long-term symptoms, restrictions in daily life and emergency visits.

controlled patients showed similar indices concerning asthma-related education attainment and the main source of education was the physician (84.1%). Majority of the patients (81.2%) claimed that they would like to become members of a forthcoming asthma association. However, they were (57.1%) less willing to work in an administrative post with no differences in these preferences between uncontrolled and controlled patients.

Discussion

The survey provides detailed information about the daily lives of our patients with severe asthma and their feelings,

judgments and expectations about current and future asthma treatments. The study clearly demonstrated that, severe asthma has a major impact on patients' daily lives. More than half of our patients with severe asthma were uncontrolled despite they were receiving guidelines-recommended treatment. Nearly, all patients with uncontrolled asthma and 75% of the patients with controlled asthma expressed a variety of activities that they were unable to do including routine daily activities, exercise, hanging out with friends, and even having pets.

Having severe asthma means that the patient's life is rather unpredictable. The unstable nature of the disease causes patients to be isolated, to a certain extent, from social life (10, 17). Almost 80% of our patients had to

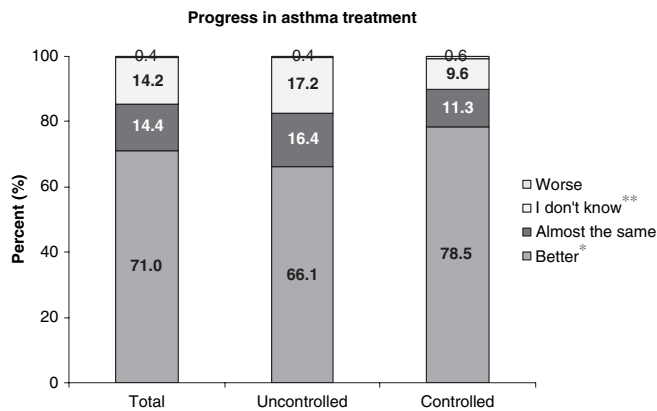


Figure 3. Answers to the following question: 'In 5 years time, do you think that the choice of asthma drugs will be worse, almost the same or better?' * $P = 0.004$ and ** $P < 0.001$; uncontrolled vs controlled.

avoid certain public places such as buses, cafes, waiting rooms, and shopping malls. A large national cohort using well-validated instruments recently found that poor asthma control was associated with a substantial degree of impairment in quality of life (18). Therefore, negative thoughts of our patients about their disease such as disturbing, stressful, worrisome, and hard was quite understandable. Almost one in three worried about life-threatening outcomes of the disease and one in five found asthma embarrassing. All these figures are comparable with the results of the European survey, although that represents the views of asthma patients from various geographic and cultural areas (10). This may be related with disease severity that has independently a major role on the perceptions of patients about their illnesses. The European survey pointed out its limitation in the selection of severe asthma patients as they used the method of random-digital dialing. We worked with specialist-diagnosed severe asthma patients; therefore, we are confident that the study population is a much better representation of this group.

A recent observational study provides evidence about an association between uncontrolled asthma and future asthma-related events such as course of oral steroids, emergency room visit, and hospitalization (19). Considering the substantial costs of these morbidities, particular interventional strategies such as education of patients and close follow-up in asthma clinics will be meaningful (20–22). Education is to enable patients to gain the knowledge, confidence, and skills in the management of asthma, and this approach has been shown to reduce asthma morbidity (23). In the present trial, only more than half of the study patients in both groups reported that they received education about asthma, although a great majority of them was following-up by academic centers. Reaching the specialist when needed was expressed as the most important aspect for optimum

asthma management. Asthma control may be enhanced by improving the consultation process during the patients' visits but the lack of time appears to be the main obstacle in that case (20, 24). Asthma services seem to be a reasonable solution to meet patients' wishes and educational needs by providing enough time. Supporting that main expectation of our patients from the government was to provide asthma clinics.

The associations between active smoking and an increase in asthma symptoms, accelerated decline in lung function, and impaired response to inhaled steroids have been clearly demonstrated (25). Furthermore, improvement in lung function and reduction in airway inflammation in smokers with asthma have been observed after smoking cessation (26). The prevalence rate of smoking (31%) in Turkey among adult asthmatics is quite similar to that of many developed countries (16). Fortunately, a great majority of our study group were nonsmokers. Further, they were concerned about passive smoking and expecting supervision on smoking prohibition.

The majority of our patients were willing to become a member of an asthma association, although they were less willing to work in an administrative position. In addition to low educational level of the study group, the restrictive nature of the severe disease seems to be preventing them from taking an active role in social associations.

In terms of patients' views about asthma drugs, the main priorities of our patients, especially for uncontrolled asthmatics, were symptom relief and quick onset of action indicating their needs about drugs that work efficiently and rapidly. One inhaler or one tablet a month was the most attractive form of drug usage for both groups. This is consistent with needs and desires of these patients about gaining control of their disease with fewer drugs, as all were on at least two-controller medications. In keeping with that, concerns about possible side-effects of asthma drugs were common. Contrary to expectation, one operation or one implant was not rated as an attractive treatment option by our patients. This might be a consequence of the awareness of the patients about the lack of such approach in the current asthma treatment.

Prevalence of the alternative medicines use in asthmatics varies from 8% to 70% with a tendency of higher prevalence rates among severe asthma patients (27). In our previous study, 42% of the patients with asthma used alternative medicines mainly with herbal products. Older age and severity of the disease were associated with high prevalence of alternative medicines use (28). Although all patients were severe asthmatics in the present trial, one-third tried alternative medicines.

Prevalence of atopy in the present study seemed to be rather higher than our previous trial, in which only 10% of the patients with severe asthma were atopic (14). The role of atopy in asthma severity is a debate (29). The converse relationship between atopy and severe asthma was clearly demonstrated in two cohorts of patients with severe asthma (11, 30). On the contrary, it has been

suggested that atopic immune response may be protective in the development of severe disease (11).

Although effective medications and guidelines-driven treatment protocols are available, many patients with asthma remain uncontrolled (6, 7, 16). Certain demographics such as less education, lower income, and co-morbidities including nasal polyps, chronic rhinosinusitis, aspirin sensitivity, gastroesophageal reflux, and hypertension have frequently reported with uncontrolled severe asthma (11, 14, 29–31). Consistently, there were more patients with chronic rhinosinusitis, nasal polyps, and lower educational level in uncontrolled group.

The results of the European survey also indicated that patients with severe asthma were optimistic for the development of effective therapies over the next 5 years (10). Considering the differences in cultural, social, and economical levels between our country and other European countries, differences between opinions and expectations would not be surprising. However, similar to this survey, there was a great belief among our patients that there would be improvements in asthma medication within the next 5 years. Contrary to the European survey,

the optimistic approach was also the case in terms of asthma control in the future. The method of study may play a role on that data besides the various differences between countries.

In conclusion, our patients with severe asthma face significant limitations in their daily life, but they are still optimistic about better asthma control and treatment options in the future.

We believe that this optimistic approach keeps these patients motivated in taking active role in the management of their disease. On the contrary, a professional organization would be helpful to our asthma patients in sharing their knowledge and experience, in establishing partnership and cooperation, and forcing governments and health care authorities to pay attention to their needs and expectations.

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Appendix 1

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Appendix 2

EFA Asthma Questionnaire

D1. Gender

D2. Age

D3. Occupation

D4. Education

F1. How many years ago were you diagnosed with asthma?

F2. What are the drugs that you are currently using?

Long-acting beta-2 agonist

Inhaled corticosteroid

Oral corticosteroid

Leukotriene antagonists

Short-acting beta-2 antagonists

Inhaled anticholinergic

Theophylline derivatives

Oral beta-2 agonists

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- F3. Does the patient have an atopic condition?
- F4. What are the additional diagnoses?
- Q1. In the last year, how frequently has your asthma disturbed your sleep?
- Q2. In the last year, how often have you had an attack of wheezing?
- Q3. In the last year, how often has your asthma been so bad that you have had difficulty speaking?
- Q4. The following are some of the negative words, which people with asthma have used to describe their asthma. Which, if any, of these words would you use to describe your asthma?
- Disturbing
 - Anxiety provoking
 - Hard
 - Embarrassing
 - Frightening
 - Expensive
 - Obstructive
 - Life threatening
 - Stressful
 - Time consuming
 - None of these
- Q5. People with asthma have told us they sometimes feel they miss out on things. Which, if any, of the following do you feel you have missed out on because of your asthma?
- Going out with friends
 - Job opportunities
 - Promotion at work
 - Holidays
 - Daily activities (shopping, housework, etc.)
 - Joining in a school or college
 - Success at study
 - Pets
 - Physical activities
 - None of these
- Q6. When you take the medicines that the doctor has prescribed for you, what matters to you most?
- a) Most important; b) Second most important; c) Third most important
- Minimizing side-effects
 - Getting the longest lasting benefit
 - Taking as little as possible
 - Getting the quickest benefit
 - Taking as prescribed
 - Taking at a convenient time or place
 - Avoiding embarrassment, none of these
- Q7. When you are taking your medicines, what other things matter to you?
- Q8. Thinking about your asthma medicines, on a scale of 1 to 10 where 1 = 'least important' and 10 (0) = 'most important', please tell me how important or unimportant you think each of the following are:
- How often I take it
 - Taking it in private
 - Convenience
 - Short-term side-effects
 - Long-lasting side-effects
 - The way I take it (inhaler, pills etc)
 - How quickly it works
 - How completely it stops my symptoms
 - How much it lets me forget about my asthma
- Q9. In an ideal world, how attractive are each of the following methods as a way of taking your medicine? Please use a scale of 1 to 10 where 1 = 'least attractive' and 10 (0) = 'most attractive'.
- A single inhaler once a day
 - A pill once a day
 - An injection once a day
 - An inhaler once a month
 - A pill once a month
 - An injection once a month
 - A one-off operation or implant
- Q10. On a scale of 1 to 10, where 1 = 'least important' and 10 (0) = 'most important', how much do you think each of the following would improve your asthma symptoms?
- Better access to asthma specialist when I need one
 - New, more effective medicines
 - Having more influence over my asthma treatment
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- Q11. Thinking about your asthma now, how close would you say you are to achieving the following?
- Very few or no asthma episodes
 - Very little or no use of quick relief medicines
 - Very few or no long-term symptoms
 - Very few or no restrictions in daily activities
 - Very few or no emergency visits
- Q12. And in 5 years time, how close do you expect to be to achieving the following:
- Very few or no asthma episodes
 - Very little or no use of quick relief medicines
 - Very few or no long-term symptoms
 - Very few or no restrictions in daily activities
 - Very few or no emergency visits
- Q13. In 5 years time, do you think that the choice of asthma drugs will be 'Better', 'About the same', 'Worse', 'Don't know'?
- Q14. Some people say they are afraid of taking their asthma medication. To what extent do you agree with the following statements, using a scale of 1 to 10, where 1 = 'totally disagree' and 10 (0) = 'totally agree'?
- I'm worried about becoming dependent on my asthma medicines
 - I'm worried about the possible side-effects of my asthma medicines
 - I'm worried that my asthma medicines may not be effective
- Q15. Are there any public places that you avoid because of your asthma?
- Bus
 - Train
 - Taxi
 - Restaurants-cafes
 - Theaters
 - Stores
 - Malls
 - Waiting rooms
 - None of them
 - Other
- Q16. Finally, if you could make the Government do one thing for people with asthma, would it be to?
- To provide clinics working only for the diagnosis and treatment of asthma
 - Increase public awareness about asthma
 - Provide free prescriptions for people with asthma
 - Supervision of ban of smoking in public places
 - Invest in research for new asthma treatments
 - Don't know
 - Other
- Q17. Did you apply alternative methods to treat your asthma?
- Q17a. (This question is only asked to patients who have tried alternative methods) Which alternative methods did you try to treat your asthma?
- Herbal medicines
 - Religious inspirations
 - Cave treatment
 - Acupuncture
 - Yoga, ayurveda, etc.
 - Quail egg, turtle blood etc.
 - Other
- Q18. Do you smoke? If yes, how many a day?
- Q20. Did you receive education for asthma treatment?
- Q20a. If yes, from which channels did you receive education? (Doctor; nurse; pharmacist; other)
- Q21. Would you become a member of an asthma patient association?
- Q21a. If yes, would you work in an administrative position?
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