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SHORT COMMUNICATION

Asthma insights and reality in Turkey (AIRET) study ☆

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Summary
Background: Several international surveys have reported low levels of asthma control compared to the levels set by the Global Initiative for Asthma guidelines.
Methods: In Turkey, 8350 households were surveyed and 400 current asthmatics responded a structured questionnaire on symptom severity, activity limitations and disease management.
Results: Most of the 55 children and 345 adults were classified as having persistent asthma (72.7% and 88.1%, respectively). In adult asthmatics, 31.3% reported current cigarette smoking and 10.7% being former smokers. Guideline-based asthma control was achieved in only 1.3% of participants. Three-quarters of children and more than 90% of adults were experiencing daytime symptoms. Most of adult patients and children reported an unfavorable impact of asthma on their social lives, and only half had ever had a lung function test. Daily anti-inflammatory therapy, including inhaled corticosteroids, was low in patients with persistent disease. Patients underestimated their disease severity and overestimated their level of disease control.
Conclusions: The low level of asthma control in this Turkish population, together with the underestimation of disease severity and control by the patients, high smoking rates and low level of preventive medicine usage indicate a need for better implementation of current guidelines and patient education on asthma in Turkey.

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Introduction

During the last decades, many attempts have been made to improve asthma-care including preparation and distribution of guidelines.[1] It is obvious that even good guidelines have no impact in clinical practice unless they are implemented to daily practice. Recently, the Asthma Insights and Reality (AIR) surveys were conducted in order to test asthma control levels set by the guidelines, in the US, Europe, Asia-Pacific, Japan and Latin America populations.[2–6] Unfortunately, these surveys consistently demonstrated a low level of asthma control and overestimation of self-perceived asthma control level.[7]

Turkey is situated between Europe and Asia within the Balkan and Middle East regions and has comparable prevalence of current asthma-symptoms among adults and children compared to European countries, but a low rate of diagnosis and treatment of asthma.[8,9]

In this study, using the methodology of AIR surveys, we aimed to investigate current level of guideline-based asthma control, patient's perception of disease control and severity, and utilization of effective asthma treatments in a Turkish population.

Methods

The survey was conducted with a methodology similar to the previous AIR surveys[7] and a representative, urban population from 15 different cities was screened.

Selection of participants

The designated respondents were assured of the voluntary nature of the survey and the confidentiality of all responses, and consent was obtained. Because this survey was non-interventional, no ethics committee approval was required.

Current asthmatic patients were defined as patients with a physician's diagnosis of asthma and who were currently taking asthma medication or had asthma attacks and symptoms during the past 12 months. Sampling was done by random door-to-door recruitment and an adult representative of each household was asked for the presence of a current asthmatic fulfilling the case study definition. In case of the presence of an asthma patient, a face-to-face interview was done with the patient or with a parent/guardian if the patient was younger than 16 years. Where more than one eligible case was identified in the same household, one of them was randomly selected. Recruitment continued until the required number of asthmatic patients with a valid interview was achieved in each area, resulting in a total sample of 400 asthmatic patients.

Questionnaire and interviews

The questionnaire was the translated Turkish version of the English questionnaire used in the Asthma Insights and Reality in Europe (AIRE) survey.[2] Respondents were questioned on asthma symptoms, medications, healthcare utilization, activity limitation due to asthma, and their perception of asthma control and severity. Questions were asked verbally and visual cards displaying the alternative answers for selection were used whenever appropriate.

Analysis and management of data

Patients were classified as having mild intermittent, mild persistent, moderate persistent or severe persistent disease by using a combined symptom severity index which was previously described elsewhere.[7] Data are presented as percentages and for quantitative variables, as means with standard deviations.

Results

Sample population

Overall, from 8530 households, at least one asthmatic patient was identified in 495 (5.8%) and valid interviews were performed by 400 (80.8%) of the respondents. Reasons for failure were either refusal or unavailability of a person for the interview. Fourteen percent of the study population ($n = 55$) consisted of children, and they were mostly represented by their mother.

A female predominance (73.3%) was observed for adult patients (49.0 ± 15.7 year), whereas an almost equal sex distribution (female 54.5%) was seen among children (7.1 ± 3.3 year). When symptom severity calculated by the asthma symptom severity index was assessed, 72.7% of the children and 88.1% of adults had persistent disease (mild 34.5% and 19.4%, moderate 12.7% and 28.4%, severe 25.5% and 40.3%; respectively). Almost one third (31.3%) of adult asthmatics were current smokers and an additional 10.7% were former smokers.

Asthma control

Considering the GINA criteria for asthma control, only 5 adults (1.25%) were able to meet all GINA criteria of asthma control. Three-quarters of children and 93.6% of adults were experiencing daytime symptoms during the last 4 weeks and two thirds of both children and adults were having night awakenings. In almost half of adults and children, sleep was disrupted at least once a week. Half of children (50.9%) and 69.0% of adults had exercise-induced asthma during the previous 12 months.

When emergency visits due to asthma were considered, almost half of patients (56.4% of children, 46.1% of adults) required an urgent/emergency visit and almost 60% of both children and adults required a quick relief prescription medicine during the last month.

Although GINA guidelines recommend no limitation of activities, social life was affected in almost three-quarter of children and adult asthmatics. The only exceptions to this were few limitations on choice of jobs/career and school/work absence, which were observed in less than half of the patients, and work absence reported in 10% of adults. Only about half of our patients had ever a lung function test, and only around 1 in 5 patients had a peak flow meter.

Only 37.5% of children and 30.3% of adults with persistent disease were using daily preventative drugs. Of these, 90% of adults and 22% of children were current users of inhaled corticosteroids.

Patients' perception of asthma

A discrepancy was found between symptom-based severity of asthma and patients' perception of severity (Figs. 1 and 2). Among patients with severe or moderate persistent asthma, 45% believed that they had either mild symptoms or no symptoms. A similar discrepancy was demonstrated for calculated asthma severity and patients' perception of asthma control level. Although guideline-based asthma control was achieved in only 1.3% of patients, actually 45% believed that their disease was either completely controlled or well controlled. When patients with moderate or severe asthma were considered, only 27.5% reported that their asthma was either poorly controlled or not controlled at all.

Discussion

The AIRET survey demonstrated a low level of asthma control in a representative sample of the urban Turkish population, which is far below levels recommended in GINA. AIRET is the first asthma study of this type conducted in Turkey and provided insights regarding the current management and future requirements of asthmatic patients in the area.

Several limitations of this study may be highlighted. Perhaps one of the most relevant is the inclusion of patients exclusively from urban areas. Considering the low level of healthcare facilities, education and socioeconomic status, inclusion of rural areas would possibly result in further lower level of asthma control and healthcare utilization.

Another remarkable finding of the study was a tendency to a more severe disease compared to other AIR survey populations.[7] About three-quarters of our children and adults had persistent disease, whereas it was only around half of the

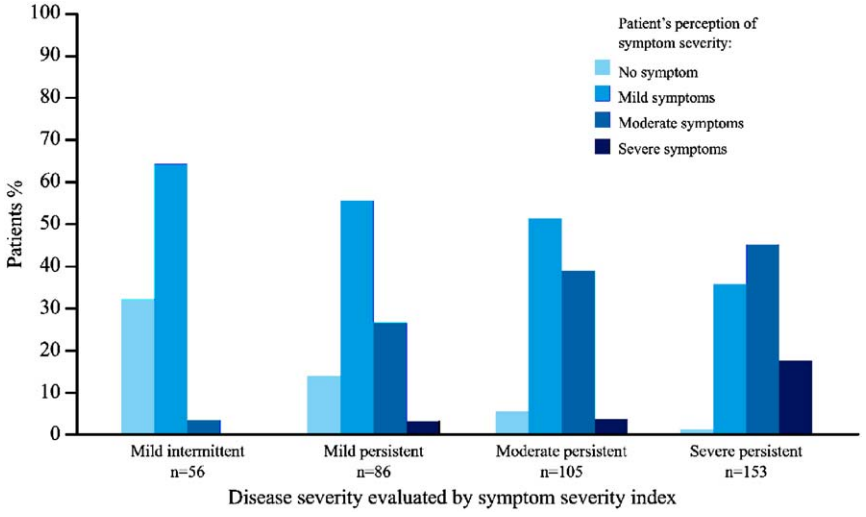

Figure 1 Patient/guardian perception of asthma control level by symptom-based asthma severity.

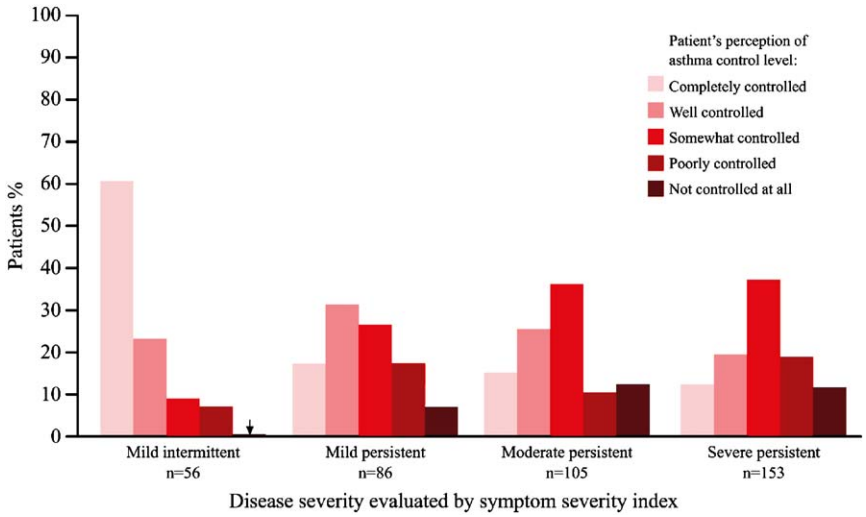

Figure 2 Patient/guardian perception of asthma severity by symptom-based asthma severity.

asthma population in the US, Europe, Japan and Asia-Pacific.[2–7] One possible explanation may be the methodology of the survey. Except in certain Asia-Pacific populations,[3] previous AIR surveys used telephone interviews[7] and AIRET used door-to-door recruitment and visual cards to aid accurate responses. Therefore the drug information data is likely more valid in AIRET than in previous AIR studies.

Patients in the AIRET survey suggest a group with more severe disease. This is also reflected by a low level of asthma control and a higher effect on social life, compared to other AIR survey populations. Guideline-based control was achieved in only 1.3% of cases in the present study, where the corresponding figure for AIRE was 5.3%; both are extremely low when the availability of effective treatments is taken into account. In the AIRE[2] and Asia-Pacific[3] studies approximately half of adult patients reported daytime symptoms, whereas it was 90% in the present study. Night awakenings were also more frequent compared to other surveys.[7] Another striking finding is the activity limitation experienced by about 80% of participants. On the contrary, the effect on school and work absence seems relatively lesser, which may be partly due to unemployment or underestimation of disease severity by the society and institutions. Finally, the adult asthmatics in AIRET reported a striking 31.3% of current smoking plus 10.7% of former smoking, which may contribute further to the lower level of disease control. This is by far the highest smoking rates reported in any AIR study to date,[7] and a call for public health action.

Daily use of anti-inflammatory therapy is recommended for patients with persistent asthma.[1] In the present study around one-third of patients with persistent asthma were currently on daily preventive anti-inflammatory therapy, and more than half of these were using inhaled corticosteroids. Although figures are well comparable or even higher than reported in other AIR survey populations,[7] many patients are still lacking the benefits of an effective treatment. A recently published study, the Gaining Optimal Asthma Control (GOAL) study demonstrated that a strict control level (total controlled) could be achieved in substantial proportion of patients treated with salmeterol/fluticasone or fluticasone (41% and 28%, respectively).[10] When guideline-based control (well controlled) was considered, the proportion of patients further increased approaching to 71% and 59%, respectively. In AIRET, despite a quantifiable low level of disease control, most patients overestimated their level of control and underestimated disease severity. This is a finding consistent with previous reports and seems to be largely due to adaptation to symptoms and lifetime limitations, and lack of awareness and low expectations of what can be achieved by using currently available treatments.

The AIRET results and conclusions are partly supported by data from two other Turkish surveys. In the CAPTURE study[11] where 756 asthmatic children and adolescents were surveyed, almost 50% reported symptoms at least once a week and only one third were on preventive medication. The second survey focused on asthma-related knowledge and attitude of Turkish physicians treating asthmatic children[12] and showed that assessment of asthma severity was the least understood part of the guidelines and a low utilization of lung function tests. Consistent with our findings, both studies pointed out the inadequate treatment of asthma as a common problem.

In conclusion, the AIRET study, consistent with other international AIR surveys, demonstrated a low level of asthma control among asthmatics in Turkey, despite the availability of effective therapies. Low usage of preventive medicine and low expectations of what can be achieved by effective treatments seem to be the main causes. Better implementation of asthma management guidelines, patient education to raise awareness and expectations, and more vigorous programs to quit smoking are warranted to improve asthma outcomes in Turkey.

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References

1. Global Initiative for Asthma (GINA). Global strategy for asthma management and prevention. National Institutes of Health, National Heart, Lung and Blood Institute. April 2002, NIH Publication Number 02-3659.
2. Rabe KF, Vermiere PA, Soriano JB, Maier WC. Clinical management of asthma in 1999: the asthma insights and reality in Europe (AIRE) study. *Eur Respir J* 2000;**16**:802–7.
3. Lai CK, De Guia TS, Kim YY, et al. Asthma control in the Asia-Pacific region: the asthma insights and reality in Asia-Pacific study. *J Allergy Clin Immunol* 2003;**111**(2):263–8.
4. Adams RJ, Fuhlbrigge A, Guilbert T, Lazano P, Martinez F. Inadequate use of asthma medication in the United States: results of Asthma in America national population survey. *J Allergy Clin Immunol* 2002;**110**:58–64.
5. Adachi M, Morikawa A, Ishihara K. Asthma insights & reality in Japan (AIRJ). *Arerugi* 2002;**51**:411–20.
6. Neffen H, Fritscher C, Cuevas F, et al. The Asthma insights and reality in Latin America survey. *Rev Panam Salud Publica* 2005;**17**:191–7.
7. Rabe KF, Adachi M, Lai CKW, et al. Worldwide severity and control of asthma in children and adults: the global asthma insights and reality surveys. *J Allergy Clin Immunol* 2004; **114**(1):40–7.
8. Saraclar Y, Cetinkaya F, Tuncer A, et al. The prevalence of self-reported asthma and respiratory symptoms in Ankara, Turkey. *Respir Med* 1997;**91**:461–3.
9. Saraclar Y, Sekerel BE, Kalayci O, et al. Prevalence of asthma symptoms in school children in Ankara, Turkey. *Respir Med* 1998;**92**:203–7.
10. Bateman ED, Boushey HA, Bousquet J, et al. GOAL investigators group. Can guideline-defined asthma control be achieved? The gaining optimal asthma control study. *Am J Respir Crit Care Med* 2004;**170**:836–44.
11. Sekerel BE, Saraclar Y, Ones U, Guneser S, Akcakaya N, Tanac R. On behalf of the Turkish national allergy and clinical immunology society. Childhood asthma perception in Turkey under real-life environment (CAPTURE) study. *Pediatr Allergy Immunol* 2001;**12**:266–73.
12. Civelek E, Sekerel BE. Management of childhood asthma: Physicians' perspective in Turkey. *Pediatr Allergy Immunol* 2004;**15**:372–5.