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The burden of allergic rhinitis as reported by UK patients compared with their doctors*

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SUMMARY

This paper presents the results for the UK from a prospective, cross-sectional, international survey to identify perceptions of symptoms and the impact of disease in allergic rhinitis (AR). Data were recorded by 124 patients and matched with data from their primary care physicians or specialists. According to the physicians' assessments, a large proportion of patients presenting for routine care had moderate or severe disease (56.5%), persistent disease (52.0%) and comorbidities such as asthma (38.7%). Compared with the physicians' assessments, patients considered that their condition was more severe ($p < 0.001$). At the time of the survey, 58.1% of patients reported suffering from nasal and ocular symptoms, and these symptoms were moderate or severe in nature in 41.1% of patients. Most patients (75.0%) reported some impact of the symptoms of AR on daily activities, and health-related quality of life (HRQoL) was negatively correlated with disease severity and the number of symptom-free days in the previous 4 weeks. This survey highlights the unmet needs of many UK patients who suffer a high symptom burden and impaired health-related quality of life. Overall, there was a poor correlation between patients and physicians in the reporting of disease severity.

Key words: Allergic rhinitis, burden, health-related quality of life, survey, UK

INTRODUCTION

Evidence from a recent trend analysis conducted in the UK indicates that prevalence rates for allergic rhinitis (AR) have stabilised. Nevertheless, general practitioner (GP) consultation rates for this condition increased by 260% between 1971 and 1991 [(1)]. Allergic rhinitis represents a significant healthcare burden; in 2004 treatment costs for allergic diseases and asthma accounted for 10% of primary care prescribing costs, and direct UK National Health Service costs for managing allergic diseases were estimated at >£1 billion per year [(2)]. A recent audit of primary care practices in the UK determined that the management of individuals with AR is not satisfactory in terms of under-diagnosis, misdiagnosis and suboptimal treatment [(3)]. In that study, only 14% (26/188) of GPs interviewed satisfied all criteria for the identification of symptoms of AR; 23% (n = 43) satisfied criteria for collection of information to support a clinical diagnosis and only one physician satisfied criteria set for adequate treatment.

The current paper presents the UK results from a prospective, cross-sectional, international survey that was conducted in six countries (France, Germany, Italy, Spain, the UK and the USA) among patients and their physicians to identify perceptions of symptoms and disease impact in AR. The results from Europe and the USA, based on data from 1482 and 447 patients, respectively, are reported elsewhere [(4,5)].

METHODS

Study design

The Allergy Disease Specific Programme (DSP©), run by Adelphi Group Products, was conducted between February and April 2006 and recruited specialists and primary care physicians and their patients. The full methodology for this survey has been outlined previously [(6)].[#*] Physicians completed a Patient Record Form (PRF) for consecutive patients and patients were invited to complete a Patient Self-Completed (PSC) form. All patients over the age of 12 years with a clinical diagnosis of AR, as characterised by the physician, were eligible for inclusion in the survey, irrespective of whether or not they were consulting for their AR on the day of the survey. Physicians recorded data relating to patient characteristics, diagnosis, symptoms and their severity, common triggers, comorbidities, current and past drug treatments, and healthcare resource utilisation. Patients recorded information on disease history, symptoms and their severity, the impact of AR on normal activities (including sleep, sport and leisure, work or school) and treatment satisfaction.

[#] Further information on the Patient Self-Completed (PSC) form and physician-completed Patient Record Form (PRF) are available from Mark Small (mark.small@adelphigroup.com) on request.

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Symptom and health-related quality of life assessments

AR is an intermittent disease; therefore, physicians and patients recorded both the presence and severity of symptoms at the time of consultation, as well as symptoms that were frequently, but not currently, present. Health-related quality of life (HRQoL) was assessed using the Mini Rhinoconjunctivitis Quality of Life Questionnaire (miniRQLQ), a validated, disease-specific questionnaire developed to measure the functional problems in adults with rhinoconjunctivitis [7]. Using a seven-point scale, where '6' represents the greatest impairment and '0' represents the least, patients assessed the impact of rhinoconjunctivitis across five domains: activity (daily activities, work/school performance, sleep), practical problems (the need to rub eyes and blow nose repeatedly), as well as nasal, ocular and other symptoms.

Statistical methods

All statistical analyses were conducted using Statistical Package for the Social Sciences Version 14 (SPSS V14) and STATA Version 9.2. ANOVA, and Pearson's Chi-square tests were first applied to mean and proportion data, respectively, across the three patient sub-groups (perennial AR [PAR], seasonal AR [SAR] and mixed [SAR + PAR], as characterised by the physician). Further statistical tests were conducted on pair-wise sub-group comparisons only if the initial tests were significant ($p < 0.05$); *t*-tests were used to compare means and Fisher's exact tests or Pearson's Chi-square tests were used to compare proportions. Bonferroni adjustments were applied to take account of multiple testing.

Only data from matched pairs of PRFs and PSC forms were included in this analysis. Kappa statistics were used to assess the level of agreement between patients and physicians [8], whereas either Wilcoxon or McNemar tests were used to assess whether there was a tendency for one group to have a more severe outlook than the other, dependent on whether the underlying outcome measure was respectively ordinal or binary in nature.

RESULTS

Patient characteristics

Overall, 512 patient record forms were completed by physicians but, because of the voluntary nature of the patient self-completion element of the survey, matching records for 388 patients were not completed, or had some missing data. Matched data from 124 patients and their physicians were evaluated. Most patients (83.9%; n = 104) were recruited by primary care physicians and the remainder (16.1%; n = 20) by specialists. Of the 124 patients, 25.0% (n = 31) were consulting for reasons unrelated to AR. The majority, however, were consulting for AR including: 16.1% (n = 20) for routine follow-up, 23.4% (n = 29) for repeat prescriptions, 12.1% (n = 15) for worsening symptoms, 10.5% (n = 13) for a first-time visit, 0.8% (n = 1) for change of medication and 1.6% (n = 2) for other reasons. Some patients (15.3%; n = 19) provided no reason, while a few patients (n = 6) provided more than one reason.

Diagnostic tests to confirm AR or allergic asthma were performed on 41.1% (n = 51) of patients at a prior visit. These primarily consisted of skin-prick testing (in 12.9% [n = 16] of patients), measurement of specific IgE (radioallergosorbent test, RAST) (in 8.9% [n = 11] of patients), or nasal allergen challenge (in one patient). In addition, a nasal endoscopy or rhinoscopy was performed in some patients (19.4%; n = 24).

Patient characteristics (as assessed by the physician) are summarised in Table 1. Most patients recruited into the study were diagnosed with AR caused predominantly by seasonal allergens (SAR) (62.9%; n = 78); AR caused by perennial allergens (PAR) was diagnosed in 29.8% (n = 37) of patients.

Persistent disease (defined as symptoms for more than 4 days per week and for more than 4 consecutive weeks) occurred in 52.0% (n = 64) of patients surveyed. Persistent symptoms were recorded in 77.8% (n = 7) of those with SAR + PAR, 51.4% (n = 19) of patients with PAR and 49.4% (n = 38) of patients with SAR; there were no significant differences in the incidence of persistent symptoms among these groups. The mean age (± SD) of the patients with intermittent and persistent disease was 33.88 ± 14.89 years and 39.17 ± 15.69 years, respectively.

Overall, 56.5% (n = 70) of patients had moderate or severe disease according to the physicians' assessments and 83.8% (n = 104) according to the patients' assessments (Figure 1). Comparison of the physicians' and patients' assessment of disease severity found that patients rated their disease as more severe than physicians ratings across all three types of AR ($p < 0.05$): SAR + PAR (28.6% [n = 2] vs. 11.1% [n = 1]; 95% confidence interval [CI] 1.1%–36.1%), PAR (40.6% [n = 13] vs. 8.1% [n = 3]; 95% CI 17.7%–47.3%) and SAR (25.8% [n = 17] vs. 5.1% [n = 4]; 95% CI 10.9%–30.5%). In general, patients across all

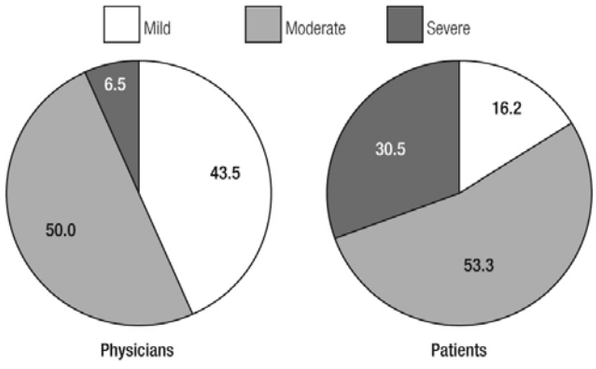

Figure 1. Disease severity reported by physicians and patients in the UK in response to the question "How do you view the severity of symptoms?"

Table 1. UK patient characteristics according to type of allergic rhinitis (physicians' assessment).

	SAR + PAR	PAR	SAR	Total
Type of allergic rhinitis, n (% of total)	9 (7.3%)	37 (29.8%)	78 (62.9%)	124 (100)
Age, years				
Mean ± SD	26.78 ± 12.91 [a, b]	45.08 ± 16.12	34.00 ± 13.87	36.78 ± 15.50 [d]
Age groups, n (%)				
≤11 years	0 (0) [b]	2 (22.2) [c]	1 (1.3) [c]	3 (2.4) [d]
12–<18 years	2 (5.4)	1 (11.1)	7 (9.0)	10 (8.1)
18–<65 years	31 (83.8)	6 (66.7)	69 (88.5)	106 (85.5)
≥65 years	4 (10.8)	0 (0)	1 (1.3)	5 (4.0)
Sex, *n* (%)				
Female	6 (66.7)	24 (64.9)	54 (69.2)	84 (67.7)
Male	3 (33.3)	13 (35.1)	24 (30.8)	40 (32.3)
Duration since diagnosis, years				
Mean ± SD	9.51 ± 9.18	7.29 ± 9.21	10.57 ± 9.51	9.51 ± 9.44
Frequency of symptoms, n (%)				
Intermittent*	2 (22.2)	18 (48.6)	40 (50.6)	60 (48.0)
Persistent†	7 (77.8)	19 (51.4)	38 (49.4)	64 (52.0)
Disease severity, n (%)				
Mild	2 (22.2)	12 (32.4)	40 (51.3)	54 (43.5)
Moderate/severe	7 (77.8)	25 (67.6)	38 (48.7)	70 (56.5)
Common comorbidities (≥5%), n (%)				
Asthma	5 (55.6) [a]	22 (59.5)	21 (26.9)	48 (38.7) [d]
Sinusitis	2 (22.2)	3 (8.1)	3 (3.8)	8 (6.5)
Anxiety	1 (11.1)	4 (10.8)	7 (9.0)	12 (9.7)
Recruiting physician, n (%)				
Primary care	4 (44.4) [a b]	28 (75.7)	72 (92.3)	104 (83.9) [d]
Allergy specialist	5 (55.6) [a b]	9 (24.3)	6 (7.7)	20 (16.1) [d]
Common triggers (≥25%)				
Pollen	8 (88.9) [a]	19 (51.4)	71 (91)	98 (79) [d]
Dust mites	5 (55.6) [a, b]	27 (73)	15 (19.2)	47 (37.9) [d]
Animal fur	5 (55.6) [a, b]	14 (37.8)	11 (14.1)	30 (24.2) [d]
Smoking status				
Current	2 (22.2)	4 (11.1)	7 (9.6)	13 (11)
Ex-smoker	1 (11.1)	7 (19.5)	7 (9.6)	15 (12.7)
Never	6 (66.7)	25 (69.4)	59 (80.8)	90 (76.3)

[a] $p < 0.05$ SAR + PAR vs. PAR; [b] $p < 0.05$ SAR + PAR vs. SAR; [c] $p < 0.05$ PAR vs. SAR; [d] $p < 0.05$ SAR + PAR vs. PAR vs. SAR
*Intermittent: symptoms on <4 days per week/<4 consecutive weeks; †Persistent: symptoms on >4 days per week/>4 consecutive weeks
PAR, perennial allergic rhinitis; SAR, seasonal allergic rhinitis; SD, standard deviation.

three types of AR considered that their condition was more severe than their physician reported ($p < 0.001$).

Common co-morbidities among patients with AR were asthma, sinusitis and anxiety (Table 1). A current or past diagnosis of asthma was significantly more common among patients with PAR than in those with SAR (59.5% [n = 22] vs. 26.9% [n = 21]; $p < 0.005$). There were no statistical differences between the groups with regards to other co-morbidities. Co-morbidities were also more frequently reported among patients with persistent compared with intermittent disease including: asthma (45.3 [n = 29] vs. 30.5 [n = 18; ns]), sinusitis (12.5% [n = 8] vs. 0.0%; $p < 0.01$), and anxiety (12.5% [n = 8] vs. 6.8% [n = 4]; ns).

Symptomatology

Patients reported similar types of symptoms irrespective of the type of AR (Figure 2). The most frequent patient-reported symptoms, currently or frequently present in more than 50% of AR patients were: sneezing (75.0%; n = 93), nasal congestion (67.7%; n = 84), rhinorrhoea (63.7%; n = 79), itchy nose (63.7%; n = 79), itchy/red eyes (62.1%; n = 77) and watery eyes (54.0%; n = 67). Some symptoms, most notably itchy/red eyes (67.9% [n = 53] vs. 45.9% [n = 17]; $p < 0.05$), watery eyes (57.7% [n = 45] vs. 43.2% [n = 16]; ns), itchy nose (66.7% [n = 52] vs. 56.8% [n = 21]; ns) and sneezing (75.6% [n = 59] vs. 67.6% [n = 25]; ns), were more prevalent among patients affected by seasonal allergens than those affected by perennial allergens (according to the patients' assessment). By contrast, patient-reported incidence of congestive symptoms, such as sinus pressure (56.8% [n = 21] vs. 33.3% [n = 26]; $p < 0.05$), blocked nose (73.0% [n = 27] vs. 61.5% [n = 48]; ns), snoring (45.9% [n = 17] vs. 19.2% [n = 15]; $p < 0.05$) and cough (43.0% [n = 16] vs. 21% [n = 16]; $p < 0.05$), were more prevalent among patients affected by perennial than seasonal allergens.

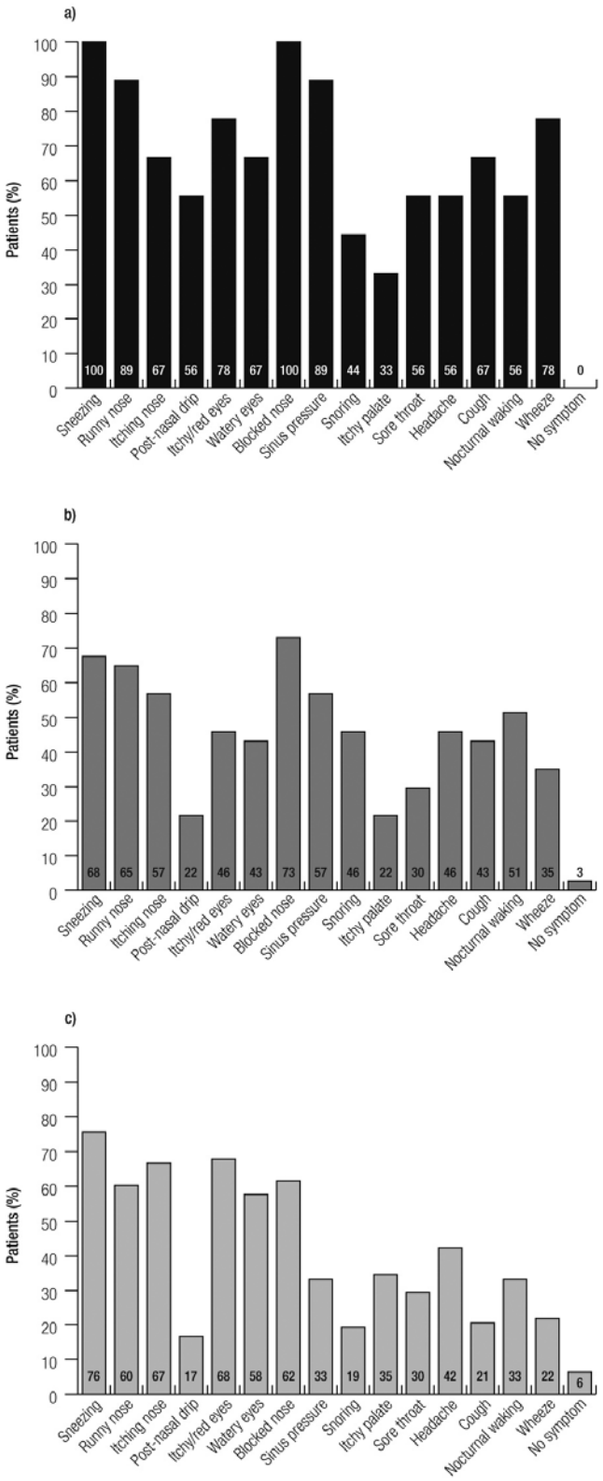

Figure 2. Patient-reported symptoms in the UK (currently or frequently present) for patients with SAR + PAR (2a), PAR (2b), and SAR (2c). Patients recorded symptoms as frequently present only if not currently present.

All symptoms were more commonly reported among patients with persistent disease than intermittent disease with a significant difference between the groups for: cough, wheeze, nocturnal waking, sore throat, headache, sinus pressure, watery eyes, runny nose, itching nose and sneezing (Figure 3).

Most patients (88.7%; n = 110) reported suffering from at least one symptom of AR, and 87.1% (n = 108) reported suffering from two or more symptoms. At the time of the consultation, more than half (58.1%; n = 72) of patients reported suffering from nasal and ocular symptoms and 41.1% (n = 51) of all patients reported that these symptoms were moderate or severe in nature.

Overall, 56.5% (n = 70) of patients across all groups and 64.9% (n = 24) of patients affected by perennial allergens reported that their AR symptoms were troublesome immediately after waking. In addition, at least one-third of patients reported troublesome symptoms at other times of the day, and 34.7% (n = 43) of patients were concerned by symptoms at night.

Almost half (46.8%; n = 58) of patients reported that their nasal symptoms were the most troublesome, and 17.7% (n = 22) of patients reported either itchy/red eyes or watery eyes as the most troublesome symptom. Of the 62.1% (n = 77) of patients who suffered itchy/red eyes, a quarter (24.7%; n = 19) reported that it was the most troublesome symptom.

Patients were symptom-free for a mean of 10.2 days over a 4-week period (8.1 days for patients with PAR, 11.3 days for patients with SAR, and 8.7 days for patients with SAR + PAR). Symptom-free days were more common in patients with mild disease (mean 12.1 ± 9.8 days) than in those with moderate or severe disease (mean 8.8 ± 8.6 days), although the difference was not statistically significant. Almost one in 10 patients (9.0%; n = 11) had been fully symptom-free during the past 4 weeks, with no significant differences between the groups according to the type of AR: 7.1% (n = 3) of patients with PAR, 9.5% (n = 7) of those with SAR and 11.1% (n = 1) of patients with SAR + PAR.

In total, 29% (n = 36) of patients were prescribed a non-sedating antihistamine (NSA), 33.9% (n = 42) were prescribed an intranasal corticosteroid (INS) and 29.0% (n = 36) used a combination of these two treatments. Approximately half (45.2%; n = 56) of patients were using two or more medicines. Most patients (75.0%; n = 42) who were taking two or more medicines were taking an NSA. The survey found that patients with severe disease were more likely to be prescribed combination therapy than those with moderate or mild disease (37.5% [n = 3] vs. 28.4% [n = 33]); although this difference was not statistically significant. Moreover, 61.1% (n = 22) of patients currently receiving an NSA plus an INS had moderate or severe disease.

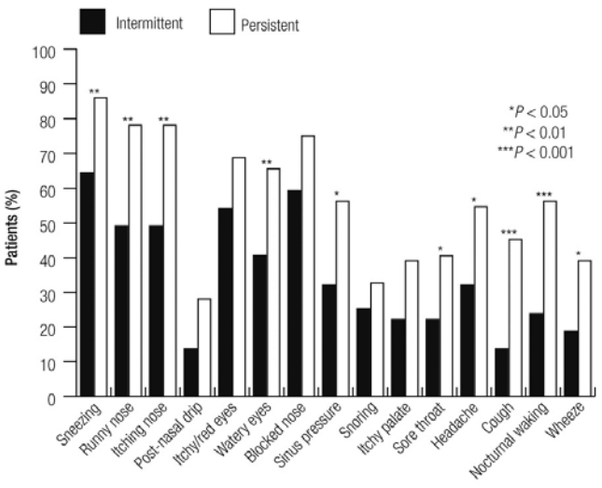

Figure 3. Patient-reported symptoms in the UK (currently or frequently present) in patients with intermittent and persistent disease.

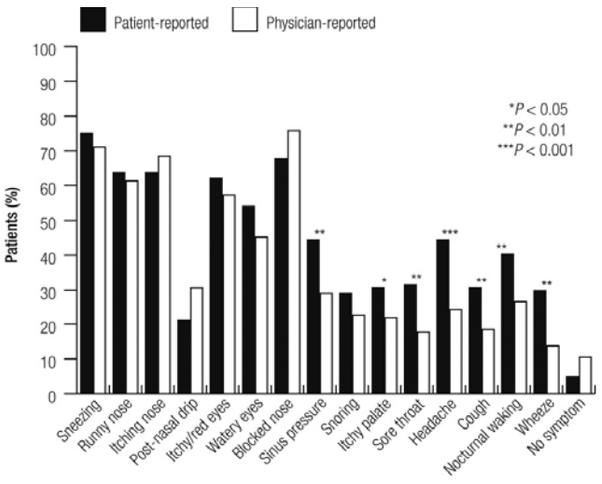

Figure 4. Total incidence of patient- and physician-reported symptoms in the UK.

Physicians assessed that nasal symptoms were 'well' or 'completely' controlled over a 4-week period in 38.9% (n = 48) of patients; they considered that 20.7% (n = 26) of patients had 'poorly' controlled nasal symptoms. Similarly, symptoms of rhinitis and ocular symptoms were considered 'well' or 'completely' controlled in 39.8% (n = 49) and 39.0% (n = 48) of patients, respectively, but 'poorly' controlled in 18.6% (n = 23) and 12.7% (n = 16) of patients, respectively. Only 44.7% (n = 35) of patients with SAR and 30.6% (n = 11) of patients with PAR had 'well' or 'completely' controlled nasal symptoms. These differences were not statistically significant.

Compared with the patient-reported incidence of symptoms, physicians tended to underestimate the incidence of all symptoms, with the exception of itchy palate and blocked nose (Figure 4). Significantly more patients recorded the presence of cough, wheeze, sore throat, headache, sinus pressure, itchy/red eyes and nocturnal waking than physicians.

Co-morbidity of asthma

According to the physicians' assessments, a higher percentage of patients with asthma had moderate or severe disease compared with non-asthma patients (66.7% [n = 32] vs. 50% [n = 38]; ns). This finding was mirrored by the patients' assessment, which confirmed a higher incidence of moderate or severe disease among patients with asthma than in those without asthma (88.1% [n = 37] vs. 81.0% [n = 51]; ns). Some symptoms, most notably wheezing (31.0% [n = 15] vs. 3.0% [n = 2]; $p < 0.001$), were more often present (either currently or frequently) in asthma patients than in those without asthma according to the physicians' assessment. Physicians assessed overall symptom control to be slightly worse for patients with asthma: 31.9% (n = 15) of patients with asthma compared with 45.5% (n = 30) of patients without asthma had 'well' or 'completely' controlled symptoms. However, a Fisher's exact test showed that the difference was not statistically significant.

Impact on sleep and daily activities

Approximately half of the patients surveyed reported that symptoms of AR had some impact on their sleep patterns in the past month: 51.5% (n = 53) and 58.8% (n = 60) of patients, respectively, reported that they had trouble falling asleep or awoke during the night.

As a result of their AR symptoms, patients with both persistent and intermittent disease reported that during the previous month they had, on some occasions, experienced difficulty in falling asleep (61.0% [n = 36] and 38.6% [n = 17]; $p < 0.05$), awoke during the night (69.5% [n = 41] and 44.2% [n = 19]; $p < 0.05$) or had trouble staying asleep (64.4% [n = 38] and 40.9% [n = 18]; $p < 0.05$). As a consequence, 76.3% (n = 45) of patients

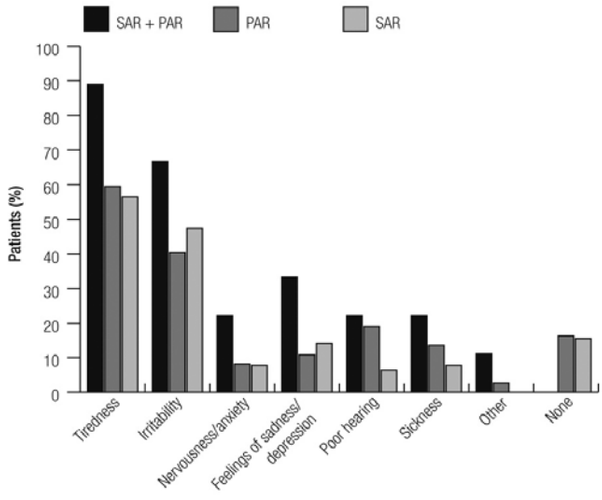

Figure 5. The impact of allergic rhinitis on how UK patients felt.

with persistent disease and 59.1% (n = 26) of patients with intermittent disease reported that they had not had sufficient sleep in the last month as a result of their AR.

Most patients indicated that their symptoms of AR had a significant impact on daily activities (75.0%; n = 93) and on work/school performance (69.6%; n = 86). This impact was rated as moderate/severe by 15.0% (n = 20) (daily activities) and 10.7% (n = 13) (work/school performance) of patients. The symptoms of AR also appeared to affect patients' mood: 59.7% (n = 74) of patients reported feeling tired and 46.8% (n = 58) reported feeling irritable (Figure 5). For the majority of patients with persistent and intermittent symptoms, AR had an impact on daily activities (83.7% [n = 41] and 63.2% [n = 24]) and work/school performance (76.5% [n = 26] and 57.1% [n = 12]) in the past 7 days. Some patients (22.4% [n = 11] and 7.9% [n = 3] with persistent and intermittent symptoms, respectively) reported a moderate/severe impact on work or school performance.

Both patients with persistent and intermittent symptoms reported daytime tiredness (71.9% [n = 46] vs. 45.8% [n = 27]; $p < 0.01$), feeling irritable (59.4% [n = 38] vs. 33.9% [n = 20]; $p = 0.01$), and sadness or depression (21.9% [n =14] vs. 6.8% [n = 4]; $p < 0.01$).

Health-related quality of life (miniRQLQ)

HRQoL data indicated that patients were 'somewhat troubled' or 'moderately troubled' by their AR (mean 2.5 ± 1.5). There were no significant differences in the miniRQLQ score among patients with PAR (2.5 ± 1.2), SAR (2.5 ± 1.7) and SAR + PAR (2.2 ± 1.2). AR had a greater impact on HRQoL in patients with more severe disease (4.0 ± 1.2 vs. 2.5 ± 1.5, $p < 0.05$). Overall, the mean HRQoL score was 2.1 ± 1.5 for patients with mild disease, 2.7 ± 1.5 for patients with moderate disease and 4.9 ± 1.2 for patients with severe disease. HRQoL was negatively correlated with the number of symptom-free days in the past 4 weeks (Pearson's correlation coefficient −0.47, $p < 0.001$). AR had a significantly greater impact in patients with more persistent symptoms than in those with intermittent symptoms (3.0 ± 1.5 vs. 1.9 ± 1.4; $p = 0.001$).

DISCUSSION

This UK-based, point-in-time survey among 124 patients with AR presenting to their specialist or primary care physician for routine clinical care demonstrated a high burden of symptoms and impairment of HRQoL among patients surveyed in early summer (June 2006). The majority (62.9%) of patients recruited into the survey were diagnosed with SAR and a significant proportion of patients presented with moderate or severe disease (56.5%), persistent disease (52.0%) and co-morbidities such as asthma (38.7%). These results confirm the findings from previous studies which show that the intermittent or persistent nature of the disease is not determined by the predominance of seasonal or perennial allergens [9] Overall, a high percentage of patients who consult their physician have moderate or severe forms of rhinitis [9-11]. Of note, in 2006 Bachert and colleagues also observed that compared with people with non-allergic rhinitis, those with AR suffer a greater number of symptoms and have more persistent, moderate–severe disease and are more likely to present with co-morbid asthma [12]. Co-morbid asthma [13] and other conditions of the upper airways [14] are known to be common among patients with AR and may be manifestations of the same systemic disease [15]. Nevertheless, the study found that, although symptoms of asthma (cough, wheeze and nocturnal waking), were commonly reported by patients, these symptoms were not recorded by many physicians. The increased co-morbidity among patients with SAR + PAR (Figure 2a and Figure 5) may reflect the referral pattern, because a disproportionately high number of these patients (5 of 9 patients [56%]) compared with either PAR or SAR (15 of 115 patients [13%]) were seen in the specialist care setting.

Comparison of the physicians' and patients' assessments of disease severity in response to the question "How do you view the severity of symptoms?" showed that physicians considered that 56.1% of patients had moderate or severe disease compared with 83.5% of patients (Figure 1). The patient-reported incidence of severe disease was significantly higher than the physicians' assessments for all types of AR ($p < 0.05$); however, the reporting of symptoms, either currently or frequently present, by physicians and patients was remarkably similar (Figure 4). This would indicate that, although both physicians and patients acknowledge the same symptoms, patients perceive the symptoms and their impact as more severe.

Physicians' impressions of disease severity are likely to reflect symptom profile at the time of consultation, while patients' perceptions of disease severity are more likely to reflect the overall burden of symptoms and impairment in health-related quality of life. Recognising this, the Allergic Rhinitis and its Impact on Asthma (ARIA) classification recommends that disease severity should be evaluated according to the impact of AR on four HRQoL parameters (sleep, daily activities/sport, work/school and troublesome symptoms) [16]. Based on this classification, physicians would have rated 83.8% of patients with moderate or severe disease (1, 2, 3 or 4 of these items), which correlates well with the patients' assessments of 83.5%.

The survey provided a useful point-in-time description of allergy patients in June, showing that symptom burden was high among this group of patients with predominantly SAR; 70% of patients had a diagnosis of SAR with or without PAR. Only one in 10 patients had been symptom-free during the past 4 weeks and patients had experienced symptoms for an average of 17.8 days over the previous 4-week period. At the time of the consultation, more than half (58.1%; n = 72) of patients reported suffering from nasal and ocular symptoms and 41.1% of patients surveyed reported that these symptoms were moderate or severe in nature.

Most patients were recruited via primary care physicians, which is likely to reflect the deficits in the provision of consultant allergists in the UK (approximately one consultant allergist per 2 million of the UK population) [17], leaving much of the responsibility for managing these patients with primary care physicians, even though the majority do not specialise and have little or no clinical training in allergy. Furthermore, only 41.1% of patients had taken a diagnostic test to confirm AR or allergic asthma. These data suggest that the management of allergy in the UK continues to be suboptimal [3]. Levy et al. reported that most GPs (59%) feel that the quality of care offered for allergic disease is poor, as reflected in the levels of symptoms these patients have reported in the survey [18]. A clear limitation of this study was the small sample size and low level of allergy testing, which may have compromised the accurate classification of AR, and therefore impacted on the results. Nonetheless, the patients recruited had a diagnosis of AR and were being treated for AR. As such, the sample represents a "real world" setting of consulting AR patients.

As reflected in this and other surveys [19,20], AR imposes a significant, and often underestimated, burden on individuals (in terms of impact on daily activities and work productivity) and on healthcare resources. Notably, most patients considered that their symptoms of AR had some impact on daily activities (75.0%) and on work/school performance (69.6%). More than half of the patients reported that their symptoms of AR had some impact on their sleep patterns in the past month. The evidence from a recent survey among patients with AR found that productivity at work is adversely influenced by disturbed sleep patterns, HRQoL, the presence of specific symptoms (most notably watery eyes and sneezing), and prescribed antihistamine use [21].

When patients were asked to assess the troublesome nature and impact of nasal and ocular symptoms on daily activities and sleep during the previous week using the miniRQLQ, patients on average reported that AR had a moderate impact on HRQoL (mean 2.5 ± 1.5). These results are similar to previous studies performed with patients with AR (mean 2.8; range 2.1–3.5) [22] and show that patients with AR consulting in primary care have a significantly greater score than those without AR of a similar age [23]. Consistent with the findings from a previous survey [24], the impact of AR on HRQoL tended to increase in patients with more severe disease (mean 4.9 ± 1.2) and more frequent allergic episodes (mean 3.0 ± 1.5 for persistent disease).

It is likely that impaired HRQoL reflects not only the level of environmental triggers at the time of survey but also the control of symptoms. Notably few patients overall (39%), and even fewer patients with co-morbid asthma (32%), achieved good symptom control according to the physician assessment. As a consequence, many patients reported that they continued to experience troublesome nasal and ocular symptoms. Approximately half (46.8%) of patients reported that their nasal symptoms were the most troublesome, and one in five patients reported either itchy/red eyes or watery eyes as the most troublesome symptom.

These results correlate well with another UK survey, which found that only a few patients (between 38% and 48%) consulting their GP reported good symptom control. The majority of patients experienced troublesome residual symptoms and described symptom control as partial or poor [25]. It is likely that underutilisation of certain medications, such as intranasal corticosteriods (INS) that have been shown to be superior to antihistamines in controlling the symptoms of AR [26], was one factor contributing to the high rate of breakthrough symptoms. Only one-third of patients with moderate or severe disease were treated with combination therapy.

In conclusion, the results of this survey support the findings from previous audits in the UK that highlight the unmet needs of the many patients in the UK with AR who suffer a high symptom burden and impaired health-related quality of life.

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