

Original article

Undertreatment of rhinitis symptoms in Europe: findings from a cross-sectional questionnaire survey

Background: Allergic rhinitis is a frequent disease affecting one in five Europeans with a significant impact on patient quality of life, health-care costs, and economic productivity. Although effective treatments exist, the disease often remains undiagnosed and not correctly treated, despite clear diagnostic and therapeutic guidelines from WHO, EAACI (European Academy of Allergology and Clinical Immunology), and GA²LEN (Global Allergy and Asthma European Network). This study elucidates the reasons for this discrepancy from the patients' point of view.

Methods: An internet and telephone survey was conducted with 2966 randomly selected adults with allergies from the general population in the five major EU countries: UK, France, Germany, Italy, and Spain.

Results: The main reason that the majority of respondents first visited a medical professional for their rhinitis symptoms was because these symptoms became intolerable. The respondents had not seen a medical professional in the past year for their rhinitis symptoms in 52.6% of the cases, and 30.2% of the respondents preferred nonprescription medication because it did not require visiting a doctor. 'Nontreaters' and 'homeopathic treaters' together made up 26.2% of the respondents, and 40.2% of them gave the cost of medication as a reason they do not use allergy medications.

Conclusions: Allergic rhinitis remains widely undertreated in Europe with avoidable socioeconomic consequences. Effective treatment exists, but patients wait too long to seek medical advice, and health providers neglect to actively screen early for allergies.

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Allergic rhinitis (AR) is a frequent health problem with a considerable burden. It has a high prevalence, affecting at least 21–23% of the adult European population (1, 2) and at least as many children (3). Moreover, the prevalence has been rising steadily for many years especially among the young (4–6). This rise in prevalence may be linked to the living conditions of the modern human-made environment (7–9), in which case this trend will not reverse.

Allergic rhinitis is apparently often *trivialized*, by patients and doctors alike (2, 10–12), but it has important consequences. Quality of life is significantly diminished for people affected (13–15). It also reduces their functional capacity, leading to lost work days (10, 16) and impaired work and school performance (10, 17). Moreover, AR is frequently associated with other respiratory inflammatory diseases, such as asthma, sinusitis, and otitis media, and poor treatment of AR can trigger or exacerbate these co-morbid conditions (6). The social costs of AR in Europe are also high: an estimated 1.0–1.5 billion Euros of direct costs (18). This may seem low but

is greatly compounded by further indirect costs for society, especially from impaired performance in work and school. Thus, the EAACI (European Academy of Allergology and Clinical Immunology) estimated that the total costs for all types of allergy will sum up EU-wide to 100 billion Euros per year (19).

For all these reasons, early diagnosis and active treatment should be a priority both for individual physicians and patients, as well as for society's overall public health systems (6, 20, 21). Early detection and optimal treatment are emphasized in guidelines (1, 22), but unfortunately AR is often underdiagnosed and treatment is neglected. One recent, large-scale survey of the European population (2) estimated the undiagnosed portion of subjects with AR at 45% – nearly half the affected population! Another recent large patient survey in France found that only half of the patients followed their doctor's prescription and nearly half of the patients were frequently self-medicating (4, 20). Furthermore, a recent clinical study has shown that up to a third of AR patients are noncompliant (12).

But there are still many unanswered questions. How do people with rhinitis symptoms first recognize their condition? What leads them to seek medical treatment? What is their relation to their doctor in treating their AR? How well do they manage their condition? Why do some people not treat their rhinitis symptoms? These are some of the questions that still need to be answered, to confront the rising epidemic of AR. The objective of this report is to elucidate the undertreatment of rhinitis symptoms – by questioning the people who have them.

Methods

Survey

This survey was conducted in June 2005 in the UK, France, and Germany by internet; in Italy mainly (89%) by internet but also by telephone; and by telephone in Spain where internet usage rates are low. The survey was piloted as a paper version administered in-person in the USA. The survey was then translated by native speakers of the target languages, and the translations were checked for equivalence to the English by qualitative researchers from each of the countries.

The survey consisted of a screening section with the exclusion and inclusion criteria, two sociodemographic items, and four content items, and then the main questionnaire with 38 content items and seven sociodemographic items; many items contained a few sub-questions. These questions were designed mostly as multiple choice and yes/no lists, with some quantification questions and Likert-scale rating questions. The content items of the survey covered topics such as: clinical manifestations of AR, treatment behavior patterns, and medication preferences. In the present paper, we focus selectively on the subset of data revealing a widespread, multistage pattern of undertreatment of rhinitis symptoms.

Subjects

Survey participants were recruited as follows. For internet-based interviews, 'panels' of people in each of the countries were used. 'Panelists' were initially recruited through a variety of online advertisement channels and through affiliated companies and were invited to join the panel only to participate in online surveys. When they first registered, the panelists had to provide profiling information about themselves and they agreed to periodically participate in a variety of online surveys. The participation level and data quality from individual panelists are monitored when they participate in surveys. Panelists who are inactive or identified as providing dubious survey answers are deregistered. Survey invitation was aimed at obtaining a mixture of gender, age, and geographic region to match the census data of the country. Within those three parameters, panel members were randomly selected. The sampling procedure for telephone surveys proceeded by dialing random numbers from a purchased list of residential numbers, distributed by area code, originally drawn from telephone books. Telephone surveys were conducted on weekday evenings (17:00–21:00) and weekends (11:00–20:00). If no one was reached or available at a number, it would be called again 24–48 h later, up to seven times. If the person answering was under 18, the surveyor would ask to speak to someone else.

Respondents were informed that the survey was about 'allergies, including hay fever, pet allergies, dust, and dust mite allergies'. The survey began with screening questions. The exclusion criteria

were: (i) occupation of the respondent or any immediate family member in marketing, market research, advertising, health-care products, pharmaceuticals, or health-care professions; (ii) under 18. The inclusion criterion was: suffers from outdoor allergies, indoor allergies, pet allergies, or hives as the most frequent form of allergy suffered from. After being asked simply whether or not they suffer from allergies, affirmative respondents were asked, 'What kind of allergies do you suffer from: (a) outdoor allergies (hay fever, pollen, trees, grass, weeds); (b) indoor allergies (mold, dust, dust mites); (c) hives, allergy rash (urticaria); (d) pet allergies; (e) insect allergies (such as bites and/or stings); (f) medication allergies; (g) food allergies; (h) none of the above' and were allowed to check all that apply. The following question asked, 'Which do you suffer from most frequently? (select only one)' and presented all the options they had just affirmed. So those who chose a, b, c, or d from the list above as the most frequent form of allergy suffered from were included in the study, while all others were not included.

The following numbers of people contacted either declined to participate or met one of the two exclusion criteria: UK = 1610, F = 1410, G = 2073, I = 879, S = 514. The following numbers of people contacted did not meet the inclusion criteria: UK = 612, F = 911, G = 2279, I = 970, S = 1373. The following numbers of qualified participants withdrew before the survey was completed: UK = 195, F = 342, G = 278, I = 168, S = 140. The raw data were weighted to match census data for the parameters of sex, age, and income, specific to each country.

The survey was completed by 2966 adults with AR in the EU (UK: $n = 585$, France: $n = 577$, Germany: $n = 654$, Italy: $n = 575$, Spain: $n = 575$). After data weighting, this transforms to a total survey population of 3036 (UK: $n = 615$, France: $n = 595$, Germany: $n = 676$, Italy: $n = 575$, Spain: $n = 575$). Although the tables and figures present the data from the five countries differentially, the study is not meant to be comparative. For the most part, the variations between the countries are not large enough to be meaningful, thus demonstrating that the problem is pan-European. Although the survey did not cover all EU countries, it is most likely applicable to all western European countries.

There is one last important point to make about the subjects of this survey. The survey relies upon respondents' self-reports about their allergies but never clinically confirms their reports. A previous study has shown that respondent self-reports and clinical diagnoses do sometimes diverge (2). However, it is safe to say that the vast majority of these survey respondents did in fact have AR. As the survey results found (see below), half to two-thirds of the respondents had seen a doctor within the past year for their allergies, so we may presume that they have already had a skin-prick or blood test from their doctor, confirming the allergies they reported in the survey. Also, only about 10% of the respondents had never seen a doctor for their allergies, but they cannot *all* be wrong about their condition. So only < 10% of the respondents may be mistaken about whether or not they have allergies – and precisely because they do not seek medical diagnosis for their symptoms, which is the issue discussed here. So finally, it should be emphasized that this paper is not about the epidemiological prevalence or clinical symptomatology of AR itself. This survey is about the health behaviors of people in the general population who acknowledge (rightly or wrongly, but almost all rightly) that they have allergies.

Results and discussion

The basic sociodemographics and clinical profiles of the survey participants are presented in Tables 1 and 2, respectively. As can be seen, the respondents were weighted

Table 1. Socio-demographics of the study participants

	UK	France	Germany	Italy	Spain
Total (n)	615	595	676	575	575
Age in years					
25th percentile	30	29	32	27	29
50th percentile	40	39	39	38	40
75th percentile	52	45	43	45	57
Gender, n (%)					
Female	322 (52)	312 (52)	356 (52)	294 (51)	294 (51)
Male	294 (48)	284 (48)	321 (47)	281 (49)	281 (49)
Income, n (%)*					
<€12 000	—	29 (5)	57 (8)	—	103 (18)
€12 000–19 999	—	58 (10)	110 (16)	—	35 (6)
€20 000–39 999	—	202 (34)	175 (26)	—	19 (3)
€40 000–79 999	—	184 (31)	136 (20)	—	2 (0%)
≥€80 000	—	24 (4)	39 (6)	—	2 (0)
Refused	—	98 (16)	159 (24)	—	414 (72)
Overall state of health, n (%)					
Poor	24 (4)	16 (3)	25 (4)	12 (2)	33 (6)
Fair	154 (25)	80 (14)	107 (16)	93 (16)	166 (29)
Good	203 (33)	275 (46)	350 (52)	264 (46)	227 (40)
Very good	189 (31)	179 (30)	176 (26)	174 (30)	97 (17)
Excellent	46 (8)	45 (8)	17 (3)	33 (6)	52 (9)

*Pretax income is given. This question was not asked for Italian participants. The UK participants' answers were not in equivalent monetary levels, so we have placed them here: <£10 000: 80 (13%); £10 000–19 999: 109 (18%); £20 000–39 999: 232 (38%); £40 000–59 999: 84 (14%); ≥£60 000: 37 (6%); refused: 73 (12%).

Table 2. Clinical profiles of the study participants

	UK	France	Germany	Italy	Spain
Kinds of allergies suffered from:					
Outdoor allergies (pollen, trees, grass, weeds)	552 (90)	475 (80)	496 (73)	471 (82)	360 (63)
Indoor allergies (mold, dust, dust mites)	252 (41)	373 (63)	292 (43)	198 (34)	261 (45)
Hives, allergy rash (urticaria)	70 (11)	122 (20)	197 (29)	157 (27)	30 (5)
Pet allergies	166 (27)	177 (30)	171 (25)	100 (17)	58 (10)
Insect allergies (such as bites and/or stings)	91 (15)	96 (16)	102 (15)	97 (17)	14 (3)
Medication allergies	74 (12)	115 (19)	112 (16)	76 (13)	18 (3)
Food allergies	94 (15)	91 (15)	138 (20)	106 (18)	24 (4)
Allergy suffered from most frequently					
Outdoor allergies (pollen, trees, grass, weeds)	467 (76)	359 (60)	407 (60)	414 (72)	317 (55)
Indoor allergies (mold, dust, dust mites)	88 (14)	167 (28)	129 (19)	78 (14)	215 (37)
Hives, allergy rash (urticaria)	12 (2)	29 (5)	101 (15)	65 (11)	19 (3)
Pet allergies	48 (8)	41 (7)	39 (8)	18 (3)	24 (4)
Duration*					
Persistent	326 (53)	298 (50)	324 (48)	207 (36)	178 (31)
Intermittent	289 (47)	297 (50)	352 (52)	638 (64)	397 (69)
Severity					
...problems with sleep	230 (37)	246 (41)	222 (33)	169 (30)	148 (26)
...problems with daily activities	105 (17)	154 (26)	136 (20)	213 (37)	147 (26)
...problems to keep my mood up, depressed	189 (31)	157 (26)	213 (31)	127 (22)	136 (24)
Treatment regimen					
Rx and OTC allergy medication and/or nasal spray	61 (10)	67 (11)	114 (17)	100 (17)	10 (2)
Only Rx allergy medication and/or nasal spray	179 (29)	301 (51)	124 (18)	174 (30)	368 (64)
Only OTC allergy medication and/or nasal spray	250 (41)	86 (14)	232 (34)	147 (26)	42 (7)
'Homeopathic treaters'†	48 (8)	46 (8)	66 (10)	63 (11)	49 (9)
None ('nontreaters')	77 (13)	96 (16)	140 (21)	91 (16)	106 (19)

Values are expressed as: n (%).

Rx, prescription drugs; OTC, over the counter drugs.

*'Persistent' was defined here not as 'symptoms >4 days/week for >4 weeks/year' as per ARIA criteria, but instead as 'symptoms ≥4 days/week for ≥4 weeks/year'.

†'Homeopathic treaters', only herbal remedies/vitamins, acupuncture, eye drops, and/or 'other'.

for representative distribution by age, gender, and economic level. About two-thirds of the respondents suffered most frequently from outdoor allergies, and about one-fifth suffered most frequently from indoor allergies.

Although there are many studies on the rising incidence of AR and on the ways of treating it, little is known about whether the AR population actually receives adequate treatment. What little is already known (2, 4, 12) appears to indicate that they do not. This survey provides a clear picture that rhinitis symptoms remain undertreated in Europe. This undertreatment takes three forms: (i) many people do not start treatment early enough; (ii) treatment in general practice often remains inadequate; (iii) there is a substantial subgroup of patients who do not really treat their rhinitis symptoms.

People with rhinitis symptoms do not start treatment soon enough

Safe, effective treatments exist for AR, but they are not helpful if patients do not seek treatment. The findings of this survey make it clear that many people wait too long to seek treatment. Also, medical professionals may not be identifying and addressing the condition as often as they could and the health-care system is not reaching out to the general population proactively enough.

First, the health-care system should be extending its interaction with the population in regards to allergies. About 60% of patients first diagnose their allergies themselves, and about 40% of patients are first diagnosed by a doctor (Fig. 1). Because of the short latency between eliciting factor (e.g. cat contact) and symptoms, many people apparently recognize that they are allergic. But maybe GPs are also not identifying allergy symptoms often enough when they see patients for other reasons. What Fig. 1 certainly also shows though is that other health-care professionals almost never make patients realize that they do not have merely ‘some kind of cold or flu that won’t go away’ but in fact probably have allergies and should see a doctor. This is surprising considering that most sick people have extensive conversations with allied health professionals about their ‘unimportant’ symptoms and allergies are a widespread condition that both physicians and allied health professionals could easily identify as a possible problem with a few explorative questions. Similarly, there is a pitifully low rate of support to recognize allergies through printed population health materials. Thus, what Fig. 1 shows altogether is that the health-care system either leaves it to patients to diagnose themselves or waits until they present themselves to the medical doctor for remedies. The more preventively oriented channels of allied health-care professionals and printed public materials remain virtually unutilized to address the allergy epidemic.

Secondly, the general population should be initiating medical care for their allergies sooner than they do. As shown in Fig. 2, about half to two-thirds of the respondents did not consult a medical professional

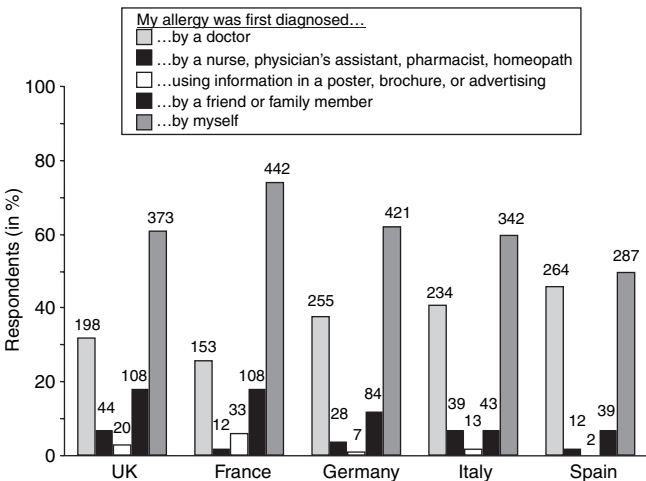


Figure 1. Responses to the question, ‘How did you first realize that you had (type of main allergy piped in here)?’. Multiple replies were possible, and we have collapsed some categories here. The percentages refer to the percentage of respondents who affirmed that particular reply, not to the distribution of respondents among the various possible replies. Numbers on bars represent actual number of responses.

about their allergies until the symptoms became intolerable. This rate is strikingly high for developed countries, yet it is consistent with a recent large Belgian survey, which suggested that people consult when they *perceive* their symptoms to be severe (23). These findings would seem to indicate both that people with allergies do not take the condition seriously until they are forced to and that there is a lack of public health awareness information on this topic. As implied above, if allied health professionals and public health awareness campaigns were encouraging the general population to seek medical advice for their allergies, probably more people would do so before the symptoms became intolerable. Also, people are referred to a medical professional for their allergies by another doctor only about as frequently as they are referred by their own friends or family (Fig. 2). This would seem to indicate that the general population is not receiving enough preventive health maintenance consultations and/or that their doctors are not identifying their condition often enough and/or taking it seriously.

Altogether, these findings make it clear that many people with rhinitis symptoms wait too long to seek treatment. This is due, at least in part, to the fact that medical professionals are not identifying and addressing the condition as often as they could and that the

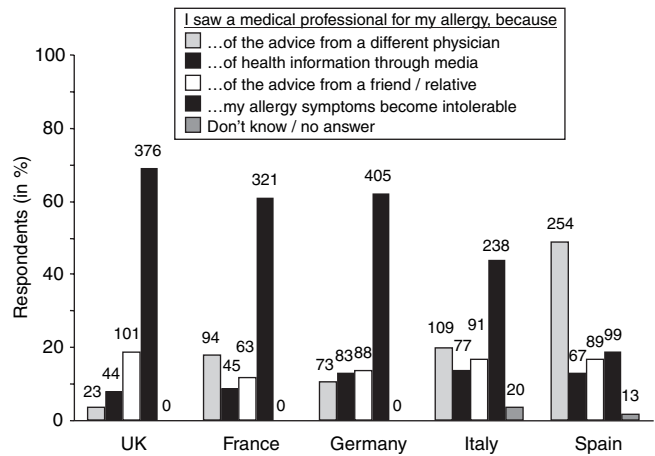


Figure 2. Responses to the question, ‘The first time you saw a medical professional for your allergies, what was it specifically that caused you to take that action? Which best describes the *main reason* you first saw a medical professional about your allergies?’ Three categories (‘Read a brochure on allergy treatment’, ‘Saw advertising on TV or in magazines’ and ‘Researched allergy treatment on my own’) have been collapsed into one, because they all represent just different channels of health education through communication media. Because this question was not asked of participants who had never seen a medical professional for their allergies (see Fig. 3), the total number of respondents was: UK = 545, France = 523, Germany = 650, Italy = 535, Spain = 523. Numbers on bars represent actual number of responses.

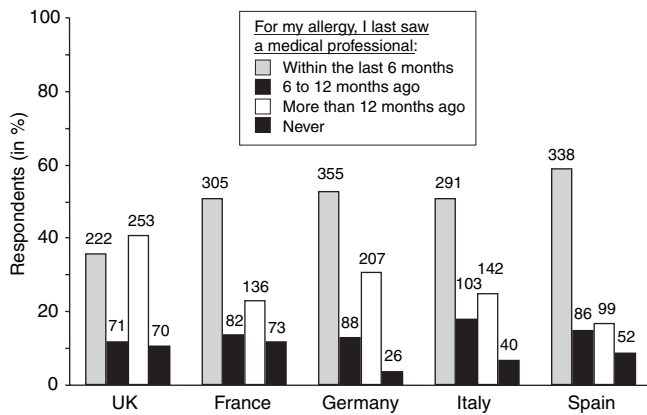


Figure 3. Responses to the question, 'How recently have you seen a medical professional (such as a doctor or nurse practitioner or physician's assistant) for your allergies?'. Numbers on bars represent actual number of responses.

health-care system is not reaching out to the general population proactively enough.

Treatment of allergic rhinitis in general practice often remains inadequate

Primary care is the appropriate setting for treating most people's allergies, but the success of this setting is dependent upon good dialogue with patients. The results of this survey suggest that there is an inadequate doctor-patient relationship for many allergy patients and an insufficiently preventive orientation to medication. About 10% of the European population with rhinitis symptoms has never seen a medical professional for their condition, and about another 20–40% of the population has not checked-in with a medical professional for their condition within the past year (Fig. 3). Furthermore, about one quarter of the AR population visits their doctors to tell them what they want rather than to have a two-way exchange with the doctors' medical expertise, and about one-quarter of the rhinitis population uses over the counter drugs medication precisely to avoid having contact with a doctor (Table 3). Thus altogether, there is an inadequate or even absent doctor-patient relation-

ship for about half the population with rhinitis symptoms. The doctor-patient relationship (24–27) with the AR population could be improved by: (i) continuing medical education in doctor-patient communication for GPs; (ii) better health education campaigns to encourage the population to discuss and proactively manage their condition with their doctor; (iii) better outreach and follow up from the doctor's office to the patients seen, rather than only meeting with the patient when the patient makes an appointment to come in.

Moreover, there is also an inadequately preventive approach to the way AR patients take their medications. As can be seen in Fig. 4, among the AR population who do treat their allergies in some way or other, only about 30% of them take their treatment preventively, while about half of them do not do so. This weighting toward remedy rather than prevention may also be shifting the kind of medication used away from preventive medications, such as antihistamines and nasal anti-inflammatory medications toward stronger 'rescue' medications, such as antibiotics and oral steroids (28) and thus is not merely an indifferent matter of patient preferences. Better patient education from health providers and in printed materials from medication manufacturers and clinics would help to shift patients' behavior toward a more preventive approach and away from reliance on rescue medications (29).

It should be emphasized that too few referrals to specialists are not the reason for these shortcomings. Referrals are needed in many cases when primary care cannot be sufficient, but this survey points out that AR patients are simply dropping out of health-care because of an inadequate relationship with their primary providers and the general health-care system. Consequently, a more robust approach in primary care, including early screening and clear diagnosis and treatment by guidelines, is needed to address the allergy epidemic.

Some people do not really treat their rhinitis symptoms

When asked which types of medications they use to treat their allergies, about one-sixth of the rhinitis population answered that they take no allergy medication at all ('nontreaters') (Table 2). Furthermore, about one-tenth

Table 3. Characterization of the physician/patient relationship with regard to allergy medication

	UK	France	Germany	Italy	Spain
I feel most comfortable and secure using an allergy product recommended by my physician	312 (51)	435 (73)	336 (50)	360 (63)	314 (55)
My physician and I act as partners in managing my allergies	226 (37)	376 (63)	346 (51)	246 (43)	240 (42)
I know how to best treat my allergies and I ask my physician for a particular brand of medication	132 (21)	150 (25)	215 (32)	145 (25)	115 (20)
I would rather use nonprescription allergy medication because it does not require a physician's prescription	310 (50)	96 (16)	264 (39)	166 (29)	98 (17)

Respondents were asked to rate how much they agreed or disagreed with each of these statements, on a 1–5 scale, where 1 meant 'disagree completely' and 5 meant 'agree completely'.

Values are expressed as *n* (%). The *n* presented in the table is the number of participants who gave a 4 or 5 as their answer. It was possible that respondents would rate more than one category with a high number. The percentages refer to the percentage of respondents who affirmed that particular reply, not to the distribution of respondents among the various possible replies.

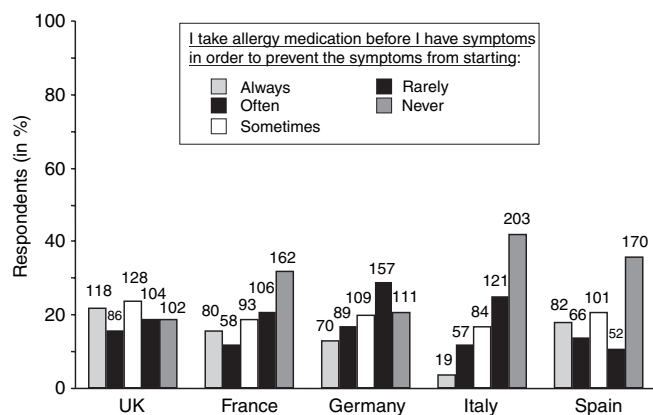


Figure 4. Responses to the question, 'How often do you take allergy medication *before* you have symptoms in order to *prevent* the symptoms from starting?'. Because this question was not asked of 'nontreaters' (see Table 2), the total number of respondents was: UK = 538, France = 499, Germany = 536, Italy = 484, Spain = 471. Numbers on bars represent actual number of responses.

of the rhinitis population reported taking only herbal remedies/vitamins, acupuncture, eye drops, and/or 'other'; these 'homeopathic treaters' essentially attempt to treat their rhinitis symptoms without taking any allergy medication (Table 2). So altogether, about one-quarter of all people with rhinitis symptoms do not take any standard efficacious medication for their allergies, which agrees with the findings of a recent, large-scale, high-quality European survey (2).

All nontreaters and homeopathic treaters were asked to rate their agreement/disagreement with statements about why they do not use allergy medication; (they may though have had further unexplored reasons). As shown in Table 4, about 40% of this pool of nontreaters and homeopathic treaters considered their condition as not severe enough to warrant medication, and this may generally be respected as a legitimate choice of self-determining adult patients if they are well informed about their condition (30).

Two further reasons are temporarily legitimate yet reflect a lack of follow up in the primary setting. A small

portion of this pool of nontreaters and homeopathic treaters – about one-eighth – cited a lack of efficacy (Table 4). Although it is understandable that patients would not continue taking medications that did not work for them, the lack of efficacy may in fact be caused by noncompliance in the direction of underusage (12) and in any case does not mean that all possible medications are ineffective. Likewise, it is understandable that side-effects might lead to discontinuing a medication, as reported by one-sixth to one-third of the nontreaters and homeopathic treaters (Table 4), but not all medications have unbearable side-effects. For both these reasons – inefficacy and side-effects – better follow up from the primary health-care providers would lead to finding other tolerable and effective medications.

Lastly, there are two reasons for nonusage of allergy medications that definitely reflect inadequate delivery of health care. About one-quarter of these nontreaters and homeopathic treaters believe that allergy medications are 'habit-forming' (Table 4), even though allergy medications have no neurochemical addictiveness and no cumulative toxicity even if a person did form a psychobehavioral 'habit'. These patients should have received better education about allergy medications. Finally, nearly half the pool of nontreaters and homeopathic treaters claimed that allergy medications are too expensive. For patients in the lowest income bracket or for older patients concerned about all their expenditures, consultation with a social worker should have enabled them to find ways to meet their medical needs. For most other people, claiming that medications are too expensive seems possibly like an excuse; patient counseling about the basic value of their health might have been useful in helping them to clarify the choices they are making. This patient attitude underscores the danger of any health-care politics that also trivializes the disease or implies that it is not worth the cost of treating.

For years, politicians have been proud to inform the population of the high standard of European health care, which ensures treatment for all important diseases regardless of the patient's income. The decision in many EU countries to not reimburse medications for AR thus

Table 4. Nontreaters' and homeopathic treaters' explanations of why they do not use allergy medication

	UK	France	Germany	Italy	Spain
My allergy symptoms are not severe enough to use medication	44 (35)	59 (41)	89 (43)	74 (48)	40 (26)
Allergy medication is not effective on my symptoms	28 (22)	15 (11)	25 (12)	24 (16)	24 (15)
I suffer side-effects from allergy medication so I do not use it	26 (21)	48 (34)	30 (15)	50 (33)	19 (12)
I believe allergy medications are habit-forming	23 (19)	45 (31)	116 (56)	43 (28)	35 (23)
Allergy medication is too expensive	56 (45)	59 (41)	90 (44)	72 (47)	37 (24)

Multiple replies were possible. Because this question was asked only of nontreaters and homeopathic treaters, the total number of respondents was: UK = 125, France = 142, Germany = 206, Italy = 154, Spain = 155. Respondents were asked to rate how much they agreed or disagreed with each of these statements, on a 1–5 scale, where 1 meant 'disagree completely' and 5 meant 'agree completely'.

Values are expressed as *n* (%). The *n* presented in the table is the number of participants who gave a 4 or 5 as their answer. The percentages refer to the percentage of respondents who affirmed that particular reply, not to the distribution of respondents among the various possible replies.

delivers the wrong message to the patients: this is not a serious disease and is not worth paying for treatment.

Conclusion

Allergic rhinitis is an expanding epidemic that is underdiagnosed and undertreated. All stakeholders – patients, health-care professionals, and politicians – need to take AR more seriously. Broader awareness needs to be promoted in the general population about AR's manifestations, possible complications, and available treatments. The medical community needs to reach out more proactively to patients and partner better with them about receiving optimal treatment. Above all, better

communication between the general population and the medical community is needed to reduce the burden of AR on the individual patient and on society as a whole.

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