

How many people think they have hay fever, and what they do about it

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SUMMARY. Little is known about the number of people who perceive themselves to be sufferers of hay fever. This study investigated how many people between the ages of 15 and 59 years perceived themselves to be hay fever sufferers and how they treated themselves. The study was carried out in a general practice in Arnold, Nottingham, using a postal questionnaire, to which the response rate was 77% from a sample size of 1062. Of the 813 respondents, 232 (29%) claimed to have had hay fever within the last two years. The prevalence of hay fever decreased significantly with age, and was associated with a history of asthma. One hundred and twenty five sufferers (54%) used over the counter treatments for their hay fever, and one third of these said that they felt drowsy after using them. These findings point to the need for general practitioners to be aware that a number of people, more than has been indicated by previous surveys, perceive themselves to be hay fever sufferers and are prepared to treat themselves using over the counter preparations.

Keywords: hay fever; patient reported morbidity; self medication.

Introduction

HAY fever is an allergic condition that is believed to have been affecting people for several centuries, and is medically defined as seasonal allergic rhinitis.¹ There are thought to be many allergens for hay fever, and pollen is the most frequently reported.² Symptoms are varied in both their type and severity between individuals, sometimes making diagnosis of the condition difficult. Symptoms may be mild, occurring only during the summer months, or more severe, causing distress over longer periods of time.³

Figures for the prevalence of hay fever vary from less than 1%⁴ to over 20%.⁵ Much of this variation can be attributed to different study designs and methods of diagnosis. Hay fever is thought to decrease with age, being unusual in those aged over 60 years.⁶ This must be considered when looking at the results of studies in which the sample population is young. Most studies have relied on a medical diagnosis or consultation rates to obtain prevalence figures.^{4,5,7-9} However, the number of people in the general population who perceive themselves to be hay fever sufferers is not known.

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Identification of the allergens responsible for their hay fever symptoms may help individuals to plan their activities accordingly. However, the marketing and proliferation of drugs for the treatment of hay fever may indicate that total avoidance of allergens is not practical and that manufacturers have seen a lucrative niche and are exploiting it. A wide range of hay fever treatments are available, both on prescription and over the counter. These treatments may bring relief to sufferers but many have unwanted side effects, the most common of which is drowsiness.¹⁰ There is the possibility that hay fever sufferers buying over the counter treatments may not use the preparations most suitable for their symptoms, and that they may not be fully aware of the side effects of such drugs.

This study aimed to discover the number of people perceiving themselves to have hay fever, whether or not they presented to their doctor for diagnosis, and how these patients treated themselves. The allergens and months of the year associated with their hay fever were also examined.

Method

Sample

A six doctor general practice with undergraduate and postgraduate training in Arnold, Nottingham was used for sampling. The practice has 12 000 patients and is situated in a suburban area. It was decided to send questionnaires to people between the ages of 15 and 59 years. At the age of 15 years it was thought that most people should be able to read and write well enough to be able to answer the questionnaire themselves; 59 years was used as the upper age limit as the prevalence of hay fever is thought to be small in those above this age. Assuming a mean reported prevalence figure for hay fever of 10%, to obtain 100 cases it was necessary to have a sample size of approximately 1000. The practice computer chose a random sample of one in seven patients within the specified age range. This gave a sample size of 1062 patients after terminally ill and mentally handicapped patients had been excluded.

Questionnaire and data collection

A self completion postal questionnaire containing closed questions was used. Patients were asked if they had had hay fever in the last two years (frequent sneezing with watery and itchy eyes) and, if so, whether their symptoms were seasonal or not. Other questions referred to demographic factors, asthma, allergens, use of over the counter treatments and their side effects, prescription use and whether a doctor had ever given a diagnosis of hay fever.

The questionnaires and a stamped reply envelope were posted in the third week of September 1990, together with a covering letter personally signed by S R stating that the study had the approval of the doctors at the practice. One reminder letter was sent to non-respondents three weeks later and data collection finished in the second week of November.

Analysis

As each questionnaire was returned, it was checked that the age and sex of the respondent was the same as that of the addressee. Any questionnaire that did not appear to have been completed

by the person for whom it was intended was not included in the analysis and was classified as a mismatch.

The data obtained from the questionnaires were coded and entered into the mainframe computer system at Nottingham University and analysed using the statistical package for the social sciences (SPSSX). Chi square tests were used to analyse percentage differences. A probability level of $P < 0.05$ was taken as significant.

Results

Twenty eight mismatched questionnaires were excluded from the study. Satisfactory questionnaires were returned from 813 respondents, giving an overall response rate of 76.6%. The age and sex distribution of the respondents was representative of the sample which in turn was representative of the practice.

Prevalence of hay fever by age and sex

A total of 232 respondents (28.5%, 95% confidence interval (CI) 25.4% to 31.6%), claimed to have had hay fever at some time in the last two years.

No significant difference in the self reported prevalence between the sexes was found, and this was also the case when the data were analysed for each age group (Table 1). There was a significant decrease in prevalence with age, (test for trend, $\chi^2 = 17.2$, 1 degree of freedom, $P < 0.001$). The relative risks with increasing age, for males and females combined, (where 15–24 years is 1.00) were found to be 25–34 years, 1.02; 35–44 years, 0.83; 45–59 years, 0.50. Similar figures were also obtained when trends with age were tested in the male and female groups separately.

Table 1. Prevalence of hay fever among 805 respondents, by age and sex.^a

Age (years)	% of respondents with hay fever	
	Male	Female
15–24 ($n = 83/74$)	31.3	39.2
25–34 ($n = 70/98$)	31.4	38.8
35–44 ($n = 109/139$)	29.4	28.8
45–59 ($n = 114/118$)	16.7	18.6

n = number of male/female respondents in age group. ^a Data on age missing for eight respondents.

Allergens and months associated with hay fever

Table 2 shows the allergens which sufferers associated with their hay fever. Some sufferers specified more than one allergen. Pollen was the most common, reported by 193 respondents. A total of 197 sufferers (84.9%) indicated that their hay fever was worse at particular times of the year whereas 35 (15.1%) did not find their symptoms worse at any specific time of year. Of the 195 respondents who specified which months were most troublesome for their hay fever, most chose June and July (Table 2). Hay fever symptoms over the winter were rare (1.5% between November and March).

Hay fever and asthma

A highly significant association between hay fever and asthma was found. Fifty six respondents (24.1%) who had had hay fever in the last two years also had a past history of asthma ($\chi^2 = 68.8$, 1 df, $P < 0.001$).

Doctor's confirmation of hay fever

Of the 232 people reporting hay fever in the last two years, 107 (46.1%) had never had their condition confirmed by a doctor.

Table 2. Allergens including hot weather, and months of the year associated with hay fever, as reported by hay fever sufferers.

	% of hay fever sufferers ^a
<i>Allergens (n = 232)</i>	
Pollen	83.2
Dust	22.8
Hot weather	15.9
Animals	11.2
Hay/straw	4.7
Perfumes	3.9
Oil seed rape	3.4
Pollution	2.6
Other	9.1
<i>Months (n = 195)</i>	
April	7.2
May	47.2
June	83.6
July	79.0
August	52.8
September	26.7
October	1.5
November–March	1.5

n = number of respondents. ^a Respondents could choose more than one option.

Over the counter and prescribed treatments

One hundred and twenty five sufferers (53.9%) had used over the counter preparations to treat their hay fever in the past two years. There was no significant difference in the age or sex of those using over the counter treatments compared with hay fever sufferers as a whole. Of the 123 respondents who indicated the number of treatments they had used during this time, 85 had used one treatment, 29 had used two, seven had used three, and two had used four treatments.

Of those using over the counter treatments, tablets were taken by 86.4%, nasal sprays by 26.4%, eye drops by 20.0% and other preparations, such as herbal preparations or honey, by 4.8% of respondents. Eighty of those using over the counter treatments (64.0%) said a doctor had agreed they had hay fever. One hundred and four respondents (83.2%) found over the counter treatments effective, while 20 (16.0%) did not (one non-respondent). Forty (32.0%) users reported feeling drowsy after taking over the counter treatments. Two respondents, a bus driver and a pilot, commented that there were not enough treatments available which did not have drowsiness as a side effect that could be used by sufferers with careers such as theirs.

Seventy three sufferers (31.5%) claimed to have had a prescription for their hay fever in the last two years.

Discussion

One of the main problems with hay fever studies is diagnosis of the condition. The results of this study are based on self diagnosis of the condition, whereas many previous studies have been based on a medical diagnosis or consultation rates. Figures based on consultation rates tend to be lower, and this study shows that many sufferers (46%) do not have their condition confirmed by a doctor. Whether or not people actually have hay fever, the fact that they perceive themselves to be sufferers is important. It may be that those buying over the counter treatments, especially those people who have not had a medical diagnosis confirmed, may not actually be using the most appropriate treatment for their symptoms.

The prevalence of hay fever in those aged between 15 and 59 years, based on self diagnosis, was 29%. Sibbald and Rink also

used a self completion questionnaire.¹¹ From a sample size of 7702 people they had a response rate of 39% and found that 1309 of respondents (44%) reported rhinitis. However, the prevalence of hay fever found in this study is higher than other figures noted in the literature reviewed;^{4,5} this was expected as other studies have been based on consultation rates and/or medical diagnoses whereas this study was not. According to practice audit, 412 patients in the practice had been prescribed hay fever treatments in the last two years. Forty two of these patients appeared in the study sample, so from patient records a prevalence of approximately 4% (42/1062) would be expected.

The decreasing prevalence of hay fever with age (Table 1), agrees with morbidity statistics from general practice 1981-82,¹² and observations made by Fry.⁷ Eaton found a significantly greater incidence of hay fever in males⁹ whereas this study, and the research by Barbee and colleagues whose work was based on positive skin tests,¹³ did not.

Although some of those who claimed to have had hay fever may not have actually had the medically defined condition (frequent sneezing associated with watering and itching of the eyes during the summer months), it is interesting to note the reported causes of their hay fever. Pollen was the most common cause of symptoms and June and July were the months when most sufferers were affected (Table 2). These observations lead one to suspect that most respondents did in fact have a seasonal allergy to pollen. The 35 sufferers who claimed to have had hay fever but did not identify a time of year when the condition was worse, may have had chronic rhinitis.

The strong association of hay fever with asthma agrees with findings in other studies. The observation that 24% of those who had suffered from hay fever in the last two years also had a history of asthma, compares with 19% reported by Pedersen,¹⁴ 30% by Fry⁷ and 31% by Blair.⁸

With the high prevalence of hay fever found, it might be expected that use of treatments would also be high. Approximately one third of sufferers claimed to have used prescribed hay fever treatment, whereas over the counter treatment was used by more than half (54%) of sufferers. That there was no significant difference in the age or sex of those using over the counter treatments compared with hay fever sufferers as a whole agrees with a report by Levin on self care.¹⁵

A study by Leff¹⁶ and a study by Helbling and colleagues in Switzerland¹⁷ both found that antihistamines were the most commonly taken treatment for hay fever. In this study tablets were found to be the most common form of over the counter treatment taken. No data were available on what these tablets were but it is probable that the majority were antihistamines. The principal side effect of antihistamines is drowsiness, and it is worrying that a third of those using over the counter treatments felt drowsy after taking them. Examination of the actual treatments causing drowsiness was beyond the scope of the study.

Since the prevalence of hay fever may be far greater than previous studies suggest, it is possible that there are a substantial number of people who are feeling drowsy, perhaps when driving, operating machinery or at school, as a consequence of taking over the counter treatment. However, drowsiness is only one of a number of possible side effects associated with hay fever treatments, others include fever, dry mouth, eye problems and nasal damage.¹⁰

There is a need to educate sufferers about the range of treatments available and in the avoidance of side effects. In particular, sufferers need to be made aware of the newer antihistamines which do not cause as much drowsiness. Heightening public awareness through posters in waiting rooms, video displays or even media campaigns might encourage patients to

visit their general practitioners to obtain the correct diagnosis and appropriate treatment. There is also a need to make doctors more aware of the high prevalence of hay fever, and indeed Sibbald and Rink found that 'Even among patients consulting for their nasal symptoms, ... only 66% of those with seasonal symptoms (any season) were labelled as having rhinitis or hay fever by the doctor'.¹¹

This study suggests that the number of people who are, or perceive themselves to be, hay fever sufferers is higher than previously thought. Hay fever decreases with age, and is more common in those with a history of asthma. Self diagnosed hay fever sufferers can use a wide range of preparations which are available without a prescription. Many of these treatments are associated with undesirable side effects and it is therefore important that users are made aware of this, and given advice on the control of symptoms by general practitioners and pharmacists.

References

1. Emanuel MB. Hay fever, a post industrial revolution epidemic. *Clin Allergy* 1988; **18**: 295-304.
2. Wood SF. Hay fever 2; clinical features, diagnosis, investigation and treatment. *Fam Pract* 1986; **3**: 120-125.
3. D'Souza MF. Hay fever — summer 'daze'. *Horizons* 1990; **4**: 320-326.
4. Perkin JN. Allergy in general practice. *Practitioner* 1972; **208**: 776-783.
5. Hagy G, Settupane GA. Bronchial asthma, allergic rhinitis and allergy skin tests among college students. *J Allergy* 1969; **44**: 323-332.
6. Binder E, Holopainen E, Malmberg H, Salo O. Anamnetic data in allergic rhinitis. *Allergy* 1982; **37**: 389-396.
7. Fry J. *Common diseases; their nature, incidence and care*. Lancaster: MTP Press, 1979.
8. Blair H. Incidence of asthma, hay fever and eczema in an east London group practice. *Clin Allergy* 1974; **4**: 389-399.
9. Eaton KK. The incidence of allergy — has it changed? *Clin Allergy* 1982; **12**: 107-110.
10. Po ALW. *Non prescription drugs*. London: Blackwell Scientific Publications, 1990.
11. Sibbald B, Rink E. Labelling of rhinitis and hay fever by doctors. *Thorax* 1991; **46**: 378-381.
12. Royal College of General Practitioners, Office of Population Censuses and Surveys and Department of Health and Social Security. *Morbidity statistics from general practice. Third national study, 1981-82*. London: HMSO, 1986.
13. Barbee RA, Lebowitz MD, Thomson HC, Burrows B. Immediate skin test reactivity in a general population sample. *Ann Int Med* 1976; **84**: 129-133.
14. Pedersen PA, Weeke ER. Asthma and allergic rhinitis in the same patients. *Allergy* 1983; **38**: 25-29.
15. Levin L. The lay resource in health and health care. *Health Promotion* 1986; **1**: 285-291.
16. Leff S. A survey of the prevalence and treatment of asthma and hay fever in a small town in East Sussex. *Public Health* 1986; **100**: 205-207.
17. Helbling A, Jenowe P, Muller U. The incidence of hay fever in leading Swiss athletes. *Schweiz Med Wochenschr* 1990; **120**: 231-236.

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