

## Actual usage of medical facilities by asthmatics in two French rural settings: a preliminary study

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**ABSTRACT:** Until recently the medical management of asthmatic patients with respect to their socio-cultural environment had only been superficially studied. Four hundred and fifty eight adult asthmatics were identified through a two-stage questionnaire in two rural districts of south west France. The study has mainly demonstrated: 1) the large number of subjects experiencing more than one attack per week (33% in Gironde, 40% in Lot et Garonne); 2) the large number of subjects feeling disabled in their occupational and day-to-day life (52% in Gironde, 54% in Lot et Garonne); 3) the absence of a relationship between the severity of the disease and the use of medical facilities in the community. Despite the frequency of the attacks and the perceived disability, 27% of the patients felt that their asthma did not require any treatment and up to 60% did not seek medical help even during an attack; 4) the role of population density, type of dwelling and social status in the management of asthma. We conclude that under-treatment is widespread in these two rural settings and is closely related with the association of at least two of these three characteristics: 1) living in a low population density area; 2) living in an isolated dwelling; and 3) being a farm owner.  
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Over the past two decades, increased knowledge in therapeutics has made it possible to improve the clinical and functional status of most asthmatic patients; yet asthma remains a substantial cause of disability and the asthma death rate has not decreased. The Research Committee of the British Thoracic Association conducted a study on deaths due to asthma which showed that a treatment better adapted to each individual patient and a thorough follow-up could have prevented 90% of these deaths [1].

Failure to use the best existing therapy could be due to deficiencies in the health care system itself, in the quality of care provided, or in the knowledge and motivation of patients.

Several studies have examined how asthmatic patients were treated by chest physicians [2], general practitioners [3], in public or private chest clinics or associations of asthmatic patients [4]. These studies mainly focus on how well the patients follow the physician's instructions. They were, however, performed on groups of patients selected on the basis of their membership of a specific medical facility; such groups are not representative of the asthmatic population. Hence, they do not actually reflect how individuals in a general

population manage their asthma. In addition, although one study examined how city-dwelling asthma patients took care of themselves [5], the way in which asthmatics manage their symptoms according to the perception of their own disability and their socio-professional group has only been superficially investigated.

The aim of this study of a community-based population of 458 adult asthmatics, living in two French rural settings, was to assess the quality of their asthma management.

### Population and methods

The study was conducted in 2 districts of Aquitaine: Gironde and Lot et Garonne.

### Rural environment

In both districts, 11 representative areas were chosen according to type of crop, farm size, population density and ratio of salaried farm workers to farm owners.

Demographic density was higher in the Gironde than in the Lot et Garonne (113 *versus* 56 inhabitants per km<sup>2</sup>). In the Gironde, 25% of the population lived in villages of less than 2,000 people, whereas in the Lot et Garonne this percentage was 40%, the latter district having a more scattered population. The rural milieu was characterized by a predominance of vine (36%) in the Gironde and of more diversified crop types in the Lot et Garonne; there were also differences in the distribution of farm sizes ( $\leq 5$  ha: Gironde 47%; Lot et Garonne 21%) and in the status of the working population, with a high ratio of salaried farm workers in the Gironde (32%) and mainly farm owners in the Lot et Garonne (50%).

The ratio of general practitioners to the farming population is 1:51 in the Gironde as compared to 1:394 in the Lot et Garonne. To these figures, one should add 4 specialists (chest and allergy) in the Gironde and none in the Lot et Garonne. These differences in geographical factors and in type of dwellings should be taken into account in the analysis of the results.

#### Medical survey

We sent a preliminary questionnaire to all members of the Caisse de Mutualité Sociale Agricole (CMSA; health insurance system for salaried and nonsalaried farm workers) in the areas studied. Among the subjects registered to the CMSA, those who currently had or in the past had had asthma were selected. If necessary, a second questionnaire was sent.

All patients with a previous history of or ongoing asthma received a more detailed questionnaire in order to determine the characteristics of their illness, age at onset, frequency of attacks, degree to which they "felt disabled" and, above all, how they managed their asthma: use of medical facilities (such as consultations, calls for the doctor in case of attack, hospital stays), treatments (drugs, immunotherapy, physiotherapy, homeopathy, *etc.*).

The population was divided into 3 categories according to the social status of the head of the family. Two of them were specifically rural: the farm owners and salaried farm workers; since the third category was more heterogeneous and included different categories (executives, workers, employees, retired persons, homemakers), it finally was discarded from the analysis.

#### Analysis of results

Differences between categories were analysed using the Chi-squared test for proportions and Student's t-test for means. To examine the specific effect of area, social status and type of dwelling while adjusting for that of the others, a stratified data analysis by means of the Mantel-Hantzel test was used.

#### Results

33,494 members of the CMSA received the first questionnaire, 11,857 in the Gironde and 21,637 in the Lot et Garonne. 13,216 questionnaires (39.5%) were returned completed. Both districts had a similar response rate (41% in the Gironde, 38.6% in the Lot et Garonne). 1,739 subjects declaring themselves asthmatic (44.3% previously had asthma, 55.7% were still suffering) received the second questionnaire out of whom 722 (41.4%) were returned completed. The response rate was not statistically different between farm owners and salaried farm workers. We focused our study on the medical self-care of the 458 patients still suffering from asthma at the time of the study, 242 living in Gironde and 216 in the Lot et Garonne.

There was a statistical difference in response between the two areas for sex (men: Gironde 59%; Lot et Garonne 69%;  $p < 0.02$ ), social status of the head of the family (farm owner: Gironde 33%; Lot et Garonne 61%;  $p < 0.001$ ) and type of dwelling (isolated: Gironde 39%; Lot et Garonne 74%;  $p < 0.01$ ). Conversely there was no difference between the two areas for age (Gironde  $39 \pm 21$  yrs, Lot et Garonne  $41 \pm 21$  yrs), age at onset of asthma (Gironde  $21 \pm 19$  yrs, Lot et Garonne  $22 \pm 19$  yrs), duration of asthma (Gironde  $17 \pm 16$  yrs, Lot et Garonne:  $18 \pm 16$  yrs), percentage of subjects with frequent attacks (1 attacks per week: Gironde 33%; Lot et Garonne 40%) and degree to which they felt disabled (Gironde 52%; Lot et Garonne 54%). There was also no difference in the perception of the asthma-induced restriction on occupation according to the type of dwelling and the area, although farm owners felt more restricted than salaried farm workers ( $p < 0.01$ ).

About one third of these asthmatics had not seen a physician for asthma treatment in the previous year (Gironde 30%; Lot et Garonne 37%). The number of physician's consultations was strongly related to the frequency of the attacks ( $p < 0.001$ ) and weakly related to the degree to which they felt disabled ( $p < 0.05$ ). The crude analysis of the data showed that in case of an attack, physicians were more often summoned in the Gironde than in the Lot et Garonne (41 vs 27%;  $p < 0.01$ ) but after adjustment for social status and type of dwelling, the stratified analysis showed that this difference was only observed in people living in an isolated dwelling (uniformity test;  $p < 0.05$ ). The same phenomenon was observed for the comparison between salaried farm workers and farm owners (42.7 vs 29%;  $p < 0.01$ ); the difference was restricted to those living in isolated dwellings (uniformity test;  $p < 0.05$ ); patients living in villages called for a physician more than those living in isolated dwellings but only in Lot et Garonne (uniformity test;  $p < 0.05$ ). Those who called for the physician in case of an attack were those who had suffered from asthma more recently ( $p < 0.01$ ). During the 12 previous months only a few patients consulted a chest specialist (Gironde 16%; Lot et Garonne 23%; NS), or an allergist (Gironde 16%; Lot et Garonne 14%). Consultation of a chest physician was significantly related to the frequency of asthma attacks ( $p < 0.01$ ); this relationship was not found

Table 1. - Main drugs taken by patients according to the different categories

n	Total	Frequency of attacks		Disabled by asthma		Duration of asthma	
		<1 per wk	≥1 per wk	yes	no	<15 yrs	≥15 yrs
	458	278	158	325	132	236	221
	%	%	%	%	%	%	%
<b>No treatment</b>	<b>27</b>	<b>32</b>	<b>13</b>	<b>24</b>	<b>34</b>	<b>29</b>	<b>25</b>
<b>One drug</b>	<b>33</b>	<b>37</b>	<b>30</b>	<b>32</b>	<b>37</b>	<b>35</b>	<b>32</b>
Theophylline	34	30	44	36	31	32	37
β <sub>2</sub> -agonists	29	27	31	28	31	33	24
Systemic corticosteroids	13	14	13	15	11	13	13
Homeopathic treatment	10	14	2	8	14	12	7
Old-fashioned drugs	7	7	8	8	6	1	14
<b>Two drugs</b>	<b>25</b>	<b>20</b>	<b>34</b>	<b>27</b>	<b>19</b>	<b>21</b>	<b>28</b>
Theo. + β <sub>2</sub> -agonists	45	41	50	45	44	41	48
Theo. + syst. cortic.	17	18	17	17	16	18	16
β <sub>2</sub> -agonists + syst. cortic.	11	2	11	11	8	12	10
<b>≥ Three drugs</b>	<b>15</b>	<b>11</b>	<b>23</b>	<b>17</b>	<b>10</b>	<b>15</b>	<b>15</b>
Theo. + β <sub>2</sub> -agon. + syst. cortic.	44	37	50	44	46	40	49

Bold figures represent percentages computed in each category, the normal figures represent percentages calculated according to the corresponding sub-group. Theo: theophylline; β<sub>2</sub>-agon: β<sub>2</sub> agonists; syst cortic: systemic corticosteroids.

for consultation with an allergist. 16% of the patients had been admitted to hospital for their asthma at least once during the previous year, most of them being those who suffered from frequent attacks ( $p < 0.001$ ).

The patients were asked to establish a list of the drugs they took for treating their asthma (table 1). The list was not exhaustive but the number of quotations per medication allowed an initial study of the treatments. Twenty seven percent of the patients claimed that they did not take any drug including 12.6% of those who had one or more attacks per week, and 24% of those who felt disabled. One third of the patients used only one drug. Theophylline was most often quoted, usually by patients who had long-term asthma and frequent attacks ( $p < 0.01$ ). Beta<sub>2</sub>-agonists were used with the same frequency by all categories of patients. Systemic corticosteroids were used as a single treatment by 10–15% of all categories of patients, more often than other medications, such as cromoglycate and anti-histamines. Inhaled corticosteroids and anticholinergics were virtually unused. Immunotherapy had been used by 30% of the patients, mainly those who felt disabled and had frequent attacks ( $p < 0.05$ ). Details about how immunotherapy was administered were, however, not obtained. Homeopathic treatment was used by nearly 10% of the patients. Old-fashioned drugs (such as adrenaline aerosols, ephedrine, anti-asthma cigarettes *etc.*) were used alone or in combination by 6% of the patients. The use of these drugs was not related to the disability or to the number of attacks but was related to the duration of patient's asthma ( $p < 0.01$ ).

24.9% of the patients, mainly those with frequent attacks, took two different drugs and bronchodilators were by far the most used. Patients' attitudes about

drug-treatment seemed to be independent of geographic factors although β<sub>2</sub>-agonists were more often prescribed in the Gironde ( $p < 0.05$ ) and homeopathic treatment more often prescribed in the Lot et Garonne ( $p < 0.01$ ). Social status did not play a role in the choice of treatments except for thermal cures; farm owners used these more frequently (10.9%) than salaried farm workers (5.8%) ( $p < 0.01$ ).

## Discussion

The goal of this survey was to assess the quality of asthma management in a rural community-based asthma population.

Two methodological points should be addressed. The first deals with the method of selection. We used a simple questionnaire, and we did not carry out any bronchial challenge. The reporting of respiratory symptoms is influenced by psychological factors [6], that in turn also influence the patient's response, the physician's judgment and the medical decision [7]. Our interest was not to establish the asthma prevalence in terms of bronchial hyperreactivity, it was rather to analyse the self-care of patients who consider themselves asthmatics. The fact that the patient believed that he was asthmatic seemed to us a better determinant for this therapeutic behaviour than any respiratory function study.

The second is the relatively low response rate in this survey. However, a prevalence of 3% of adults suffering from asthma is generally accepted in France [8] and is close to our figure of 2.9%. Previous studies of asthma in general practice have dealt with much smaller samples

than in this study. SHEE *et al.* [9] reported on 67 patients in a south London general practice who only represented 0.5% of the total patient list. MODELL *et al.* [10] were unable to study more than 10–20% of the asthmatics in their own practice. The conclusions of our study are indeed limited by the response rate, although it is unlikely that this strongly affects the results and the relationships between variables.

This survey has mainly demonstrated:

- 1) the large number of subjects with more than one attack per week;
- 2) the large number of subjects experiencing disability in their occupational and day-to-day life;
- 3) the absence of a relationship between the severity of the disease and the use of medical facilities in the community;
- 4) the role of population density, type of dwelling and social status in the management of asthma.

Despite the frequency of the attacks and the perceived disability, 27% of the patients felt that their asthma did not require any treatment and up to 60% did not seek medical help even during an attack. Although this attitude is commonly found in patients who seldom suffer from attacks or for whom discomfort is kept to a minimum, we also found it among those who experienced frequent attacks and for whom asthma was a handicap. Under-diagnosis cannot explain this since all patients called themselves asthmatic, but under-treatment, mentioned in previous studies as one of the main causes of asthma deaths [1], was clearly demonstrated here.

The types of drugs taken by these patients were fairly similar to those recommended by French chest specialists in a European study [2]. The percentage of patients using them was, however, different in this population from that in the city-dwelling population studied by questionnaire in 3 south eastern cities of France [5], 70% and 90%, respectively. But this difference was mainly related to a different use of  $\beta_2$ -agonists, and there was no difference for the other medications.

Old-fashioned medications were still used by patients with a long history of asthma. This demonstrates patients' attachment to routine, sometimes archaic, treatments on which they have been relying for years. This attachment may indicate their poor medical education. It may also suggest that some medical prescriptions have failed to evolve.

Taking into account severity and duration of the illness as well as perceived disability, we can establish a typology of the patients according to their medication:

- 1) old-fashioned drugs are used by disabled patients with a long history of asthma;
- 2) theophylline is the most popular drug; however it is generally taken by patients with a long history of asthma, who experience frequent attacks and feel disabled; one can also observe that "theophylline patients" and "old-fashioned drugs patients" thus have a similar profile; this should not be too surprising, since theophylline is the oldest asthma treatment commonly used.
- 3)  $\beta_2$ -agonists are taken mainly by recent asthmatics, whatever their type;

4) systemic corticosteroids are taken by all groups of asthmatic patients;

5) homeopathic treatment is used by recent asthmatic patients experiencing rare attacks and a minor disability. This could be, for the patient, the "soft" treatment of a "soft" disease.

In spite of reporting their disease as very severe in the questionnaire, patients had a poor medical follow-up. They did not benefit from regular check-ups by either a general practitioner or a specialist. In addition, they rarely called for their physician even in case of an attack. Living in isolated houses and in low population-density areas decreased the frequency of check-ups for patients who rarely call doctors or who only call them late in an attack. The small number of consultations and visits is probably compensated for by a great deal of self medication. If the absence of, or delay in therapy increases morbidity or mortality in asthma, a major effort has still to be made to reduce them.

Social status and type of dwelling can affect attitudes of asthmatic patients towards their disease and their treatment. In the present study, these two factors did not interfere with the use of medication, immunotherapy or physiotherapy. Such was not the case for physicians' calls in case of an attack. Farm owners called a physician less frequently although declaring themselves more disabled and more often suffering from asthma attacks than salaried farm workers. This difference may be explained by geographic factors. In the two areas we studied, the percentage of farm owners living in isolated dwellings, far away from their physician was higher than that of salaried farm workers (75% vs 44%;  $p < 0.001$ ). Moreover, this difference was largest in the Lot et Garonne where physicians' density is the lowest. A call means a home visit at a long distance and the patient may hesitate to trouble his doctor. This seems to be, however, a new attitude; in 1970, a CREDOC study [11] dealing with doctors' visits according to social status showed different behaviour among rural patients because salaried workers did not seem to call for medical treatment as often as farm owners. However, there might be another reason for this new attitude: the CMSA now offers its salaried members better preventive coverage through a yearly check-up, which is not offered to farm owners. These preventive visits may provide the salaried worker with a thorough health education which enables him to cope better with his illness.

An alternative explanation for the different attitudes between salaried workers and farm owners regarding physicians' calls should also be considered. Farm owners pay all of the fees for their health insurance directly, whereas salaried workers pay only part of these, the remaining part being paid for them by their employers. Therefore, farm owners might be more cautious about the overall cost of their insurance system, salaried workers behaving just as regular consumers.

In conclusion, under-treatment is widespread in these two rural settings. It is closely related with the association of at least two of these three characteristics: 1) living in

a low population density area; 2) living in an isolated dwelling; 3) being a farm owner rather than a salaried employee.

This study emphasizes the need for a better education of asthmatic patients encouraging them to seek more appropriate medical care to reduce morbidity from their disease. Unless the present situation is improved there will remain a substantial number of patients in the community who unnecessarily experience appreciable morbidity and remain at risk for fatal asthma attack.

#### References

1. British Thoracic Association. – Death from asthma in two regions of England. *Br Med J*, 1982, 285, 1251–1255.
2. Marsac J. – French audit of asthma therapy. *Chest*, 1986, 90, 78S–80S.
3. Horn CR, Cochrane GM. – Management of asthma in general practice. *Respir Med*, 1989, 83, 67–70.
4. Pretet S, Perdrizet S, Poisson N, Pujet JC, Marsac J. – Treatment compliance and self-medication in asthma in France. *Eur Respir J*, 1989, 2, 303–307.
5. Kleisbauer JP, Charpin D, Renon D, Lanteaume A, Razzouk H, Vervloet D. – Comment l'asthmatique se soigne-t-il? *Med et Hyg*, 1987, 45, 1034–1040.
6. Dales RE, Spitzer WO, Schechter MT, Suissa S. – The influence of psychological status on respiratory symptoms reporting. *Am Rev Respir Dis*, 1989, 139, 1459–1463.
7. Jones NF, Kinsman RA, Dirks JF, Dahlem NW. – Psychological contributions to chronicity in asthma: Patient response styles influencing medical treatment and its outcome. *Med Care*, 1979, XVII, 1103–1118.
8. Paarc. – Pollution atmosphérique et affections respiratoires chroniques ou à répétition. II. Résultats et discussion. *Bull Eur Physiopathol Respir*, 1982, 18, 101–116.
9. Shee CD, Poole D, Cameron IR. – Treatment of asthma in a general practice. *Post Grad Med J*, 1984, 60, 336–337.
10. Modell M, Harding JM, Horder EJ, Williams PR. – Improving the care of asthmatic patients in general practice. *Br Med J*, 1983, 286, 2026–2030.
11. Mizrahi A, Mizrahi A, Sandier S. – In: *Socio-économie de la Santé*. Pergamon Press, France, 1982, p. 190.

*Recours aux structures de soins par les asthmatiques dans deux départements ruraux français.* A. Taytard, J.F. Tessier, M. Gervais, J.P. Gachie, C. Douet, L. Kombou, J. Vergeret, P. Freour.

RÉSUMÉ: Le recours aux structures de soins et la thérapeutique des asthmatiques en fonction de leur environnement socio-culturel ont été peu étudiés jusqu'ici. 458 asthmatiques adultes des deux sexes ont été identifiés dans 2 départements ruraux du Sud Ouest de la France au moyen d'une enquête par auto-questionnaire à 2 niveaux réalisée avec l'aide de la Caisse de Mutualité Sociale Agricole. Elle a montré: 1) le grand nombre de sujets ayant plus d'une crise par semaine (33% en Gironde, 40% en Lot et Garonne); 2) le grand nombre de sujets se sentant handicapés dans leur vie quotidienne et professionnelle (52% en Gironde, 54% en Lot et Garonne); 3) l'absence de relation entre la gravité de la maladie et l'utilisation des structures de soin. Malgré la fréquence des crises et le handicap perçu, 27% des sujets considéraient que leur asthme ne nécessitait aucun traitement et 60% ne faisaient pas appel au médecin même en cas de crise; 4) le rôle de la densité de population, du type d'habitat et du statut social dans la prise en charge de l'asthme. Nous pouvons conclure que le sous-traitement est fréquent en milieu rural et étroitement lié à l'association de deux au moins de ces trois caractéristiques: 1) vivre dans une zone à basse densité de population; 2) vivre dans un habitat isolé; 3) être propriétaire. *Eur Respir J.*, 1990, 3, 856–860.