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The Asthma Impact Record (AIR) Index: a rating scale to evaluate the quality of life of asthmatic patients in France

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ABSTRACT: Asthma is a chronic disease, which affects patients' daily lives. The goal of this study was the development of a disease-specific scale to evaluate quality of life in asthmatic patients in France: The Asthma Impact Record Index (AIR Index).

The study was conducted with the participation of 486 asthmatic patients using the following steps: 1) selection of dichotomous items; 2) reduction of the number of items; 3) study of reproducibility of the questionnaire; 4) weighting of items; 5) study of the reliability and validity of the final version of the AIR Index.

The final version of the AIR Index contains 63 unweighted items. The items were classified into subscales representing the main dimensions of quality of life: 1) physical, which was itself split into two subscales: a) physical activities; and b) symptoms; 2) psychological; and 3) social or relational. The internal consistency, measured by Cronbach's alpha coefficients, was found to be high, for the global scale and all subscales (range 0.79–0.94). The concurrent validity, evaluated by studying the relationship between the score values on the global scale and the subscales, and the parameters reflecting disease severity, was also high.

We conclude that the AIR Index might represent a useful evaluative and discriminant instrument in studying quality of life in asthma in French populations.
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Asthma is a chronic disease which affects patients' daily lives. The international definition of the disease (transient and recurrent episodes of dyspnoea, ceasing spontaneously or under treatment), underlines the fact that the disease is a syndrome, associating multiple causes, symptoms and functional characteristics [1].

It is well-known that in asthmatic patients, the perception of dyspnoea might not always be related to the magnitude of airway obstruction [2], and that quality of life indices focusing on patients' own perceptions of the disease provide additional information which is not obtained when using conventional clinical and functional measurements [3–7].

Generic quality of life scales may be used. However, they are not sensitive enough to change in disease-specific situations [8, 9]. Furthermore, some characteristics of asthma require the use of a specific scale. The disease is chronic and recurrent, and although intermittent, might last for a person's entire life. Patients are otherwise healthy but avoidance of current environmental factors might create serious disease specific problems in daily lifestyle [3].

Whilst, for the most part, scales have been developed in Anglo-Saxon cultures and then translated and validated, to a greater or lesser extent, in other cultures, problems with cross-cultural validation are beginning to be addressed by those working in the field [10]. Cultural anthropologists have described differences in expectations, social relationships, lifestyles, *etc*. all of which could have an effect on perceptions of the impact of the illness on quality of life [11]. The development of a French language questionnaire would permit comparisons across different French-speaking cultures that might not otherwise be possible.

In this study, we report the development of an asthma-specific quality of life index, the Asthma Impact Record (AIR Index) in a large French population (486 patients). To our knowledge, this is the first asthma-specific quality of life questionnaire developed directly in a French-speaking culture.

Methods

The questionnaire was developed using standardized methodology described for the construction of scales [3, 8, 9]: selection of items; reduction of the number of items; study of reproducibility of the questionnaire; weighting of items; study of the reliability and of validity of the final version of the AIR Index.

Patient population

Inclusion criteria. To accomplish all steps in the development of the scale a total of 486 asthmatic patients were selected. All patients fulfilled the criteria of the American Thoracic Society (ATS) for asthma [12] and took an anti-asthma drug at least once a month. In all patients, asthma was diagnosed by specialists in pulmonary medicine. Patients were required to be at least 18 yrs of age and able to read and write French. They were included if they had a 15% improvement in forced expiratory volume in one second (FEV_1) (expressed as a percentage of their predicted normal value) following bronchodilator or anti-inflammatory drug. In addition, patients were also included if their FEV_1 fell by at least 15% after a challenge test (histamine, methacholine, exercise). Patients with other diseases involving chronic airflow limitation were excluded, as were patients with chronic functional incapacity, psychiatric patients and pregnant and perinatal women. Patients were recruited in 51 different out-patient services over a period of 3 months. They were approached consecutively if they met the inclusion criteria. No centre reported patient refusals. All patients were informed of the study and their writen consent to participate was obtained.

Preliminary sample. Seventeen asthmatic subjects (12 females and 5 males; mean age 43±18 yrs; mean duration of asthma 15±12 yrs) participated in the development of the initial list of items in an open, nonstructured discussion with a psychologist and a health educator. All were out-patients in a single university hospital ambulatory care unit.

Sample A. The responses of 387 patients (sample A) who filled in the initial questionnaire were used to reduce the number of items (see below). The characteristics of these patients are summarized in table 1. Fifty seven percent of patients were female and the group represented a wide range of asthma severity. All variables were tested by gender and by age. The only statistically significant differences between males and females were the following: 29% of males *versus* 40% of females had at least one serious attack in the past 12 months ($p<0.04$); and the peak expiratory flow (% predicted) was higher in males than females (92±25 *versus* 68±21%, respectively; $p<0.02$). The statistically significant differences by age are shown in table 2. Patients have been divided into three age groups: 18–29, 30–50, and >50 yrs, on the basis of the existing literature [4, 5].

Sample B. Thirty two subjects (Sample B), whose clinical condition was stable (unchanged treatment and same number of asthma attacks per week in the last month), participated in this part of the study, which assessed the test-retest repeatability of the questionnaire.

Sample C. Sixty two subjects weighted the items (Sample C). This sample was characterized by a level of education higher than that of the general population: 38% of patients had completed university studies. Characteristics of patients in samples B and C are also summarized in table 1.

Psychometric procedure

Item development and selection. The objective of this step was to establish a list of questions which could detect changes in asthma-related health status. These questions covered all the important components of the domain, they were applicable to all respondents and the relevance of the questions did not vary over time.

The first group of asthmatic subjects (Preliminary Sample) was interviewed by a psychologist and a health educator about the disease and the constraints created by

Table 1. – Characteristics of the three study samples (A, B, C)

	Sample A (n=387)	Sample B (n=32)*	Sample C (n=62)*
Age yrs#	44 (16)	53 (17)	45 (17)
Sex M/F	167/220	12/20	23/39
Duration of asthma yrs#	19 (14)	17 (16)	19 (16)
PEFR % pred#	78 (26)	71 (21)	80 (17)
Discomfort caused by asthma at the time of the visit‡			
None	132 (34)	7 (22)	24 (39)
Mild	111 (29)	14 (44)	21 (34)
Moderate	93 (24)	8 (25)	11 (18)
Great	36 (9)	3 (9)	5 (8)
Considerate	15 (4)	-	-
At least one serious attack of asthma (requiring emergency treatment by a physician) in the past 12 months‡	136 (35)	12 (38)	16 (26)
Hospitalization for a serious attack in the past 12 months‡	61 (16)	7 (22)	8 (13)
Consumption of oral corticosteroids during the last 12 months‡			
None	143 (37)	5 (16)	17 (27)
<1 g	96 (25)	10 (31)	31 (50)
1–2 g	56 (15)	5 (16)	9 (15)
>2 g	89 (23)	12 (38)	5 (8)

#: mean, and SD in parenthesis; ‡: number of patients, and percentage in parenthesis. *: 12 subjects participated in both phases. N.B: 17 additional patients comprised the preliminary sample. M: males; F: females; PEFR: peak expiratory flow rate; % pred: percentage of predicted value.

Table 2. – Significant differences between age groups

	Age Groups			
	18–29 yrs (n=89)	30–50 yrs (n=150)	>50 yrs (n=148)	Test
Duration of illness yrs	13±8	20±12	23±17	ANOVA p<0.001
Consumption of corticosteroids %				
None	54	38	27	Chi^2
<1 g	27	21	28	p<0.0001
1–2 g	4	14	22	
>2 g	15	28	24	
PEFR % pred	81±19	82±26	73±28	ANOVA p<0.02

PEFR: peak expiratory flow rate; % pred: percentage of predicted value; ANOVA: analysis of variance.

the disease in their daily life. This discussion elicited the keywords and covered those components salient to patients that pertain to the domain of asthma-induced disability (emotions and anxiety, limitations in physical abilities, limitations in familial, social and professional life, sleep disturbance). These elements were then formulated into statements and keywords, which became the core of the asthma-specific questionnaire presented to the other populations. In order to facilitate understanding and acceptability and the eventual auto-administration of the questionnaire in a population of patients that was not necessarily "test-wise" and to avoid extreme responses [13], items with dichotomous answers were developed. In the process of completing such questionnaires, patients were asked to tick only those statements which, they felt, matched their current health status and which were related to the illness being studied. At the end of each page they were asked to verify that they had not missed any questions by ticking a final summary box. This method was consistent with that developed for the Sickness Impact Profile (SIP) [14].

Two types of items were included: items describing discomfort associated with asthma (so-called "negative" items, rating 1 if ticked and 0 if not ticked), and items stating that daily life was not disturbed by the disease (so-called "positive" items, rating 0 if ticked and 1 if not ticked). This was done in order to avoid a predominantly pessimistic evaluation of quality of life and in order to verify the response consistency.

The questionnaire was then presented to other asthmatic patients who were seen by other lung specialists in the same university hospital pulmonary department. These patients verified that the questions were pertinent and understandable. A first version of the scale (Q1), was obtained.

Item reduction. The objective of this step was to delete redundant items and retain those items that formed a consistent group assessing quality of life. Reduction of the number of items of Q1 and their grouping into subscales, to obtain scale Q2, was carried out as follows: Sample A (387 asthmatics) completed scale Q1. Spearman's correlation coefficients between items taken 2 by 2 were calculated, in order to verify that the items were not redundant. An initial principal component factor analysis was performed. Items ticked by less than 5% of asthmatic patients, ambiguous items (not clearly positive or negative), and items judged not sensitive to the evolution of the disease in a trial, were withdrawn. The remaining items were regrouped into three subscales: physical, psychological and social dimensions based on the existing literature [14, 15]. Subsequent subscales were defined using dimensions that had been generated in the initial discussions with patients.

Allocating an item to a subscale was done by combining results of an analysis by three members of our team, the patient data, values of correlation coefficients between items taken 2 by 2, and values of Cronbach's alpha coefficients, which measured the internal consistency of the subscales and of the overall scale. Items whose elimination improved the Cronbach's alpha coefficient were removed. A second version (Q2) of the scale was thus obtained. The internal consistency of this entire scale and of the subscales was assessed by Cronbach's alpha coefficients [13], and by verifying the structure of the scale and its subscales by correlating each item with every subscale, to determine with which subscale it was the most highly correlated [16].

Study of the reproducibility of the questionnaire. Sample B (32 stable asthmatics) filled in the second questionnaire Q2 twice, at an interval of 3 days. Kappa coefficients of agreement between both evaluations were calculated for each of the items [17]. Intraclass correlation coefficients were then calculated for the entire scale and the subscales [18], and analyses of variance (ANOVA) on subscale scores for detection of reproducibility were performed. After this step, a third version (Q3) was obtained.

Weighting of each of the items with comparison of the weighted and unweighted versions of the questionnaire. Sixty two subjects (Sample C) filled in the asthma-specific scale, Q2, twice. The first time, they evaluated their own quality of life, so that they could become familiar with the questionnaire and then, they weighted each of the items by ticking a visual analogue scale (VAS) for each item. For negative items, the values ranged from "the item means that daily life is not disturbed at all" to "the item means that daily life is very disturbed". These scales were measured from left to right. For positive items, the values ranged from "the item means that the patient lives well despite his asthma" to "the item means that the patient does not live well with his asthma". These VAS were measured from right to left. Two types of weighting were obtained by calculating the mean and median values of the length ticked on each of these VAS.

For the comparison of the weighted and the non-weighted versions of the questionnaire, nonparametric

Spearman's correlation coefficients between total scores of the three questionnaires (nonweighted version of Q3, version of Q3 weighted by means, and version of Q3 weighted by medians) and concurrent variables (SIP score, VAS, peak expiratory flow, intensity of attacks during the last 12 months and during the preceding month, exertional dyspnoea, consumption of oral corticosteroids) were calculated to determine the convergent or concurrent validity.

Study of the validity of the final version of the questionnaire. Answers to the AIR Index in the largest asthmatic population (Sample A, 387 patients) were used to study the reliability and validity of the index. The internal consistency of the scale was measured by Cronbach's coefficient for the entire scale and for the subscales.

The concurrent validity of the final version of the scale was assessed by examining the relationships between the values for scores on the subscales and the overall scale with external measures: *i.e*. the generic quality of life questionnaire, "SIP", selected because it is commonly used and because a validated translation of this scale existed in French [19]; a VAS aimed at evaluating the patient's perception of his global quality of life; parameters reflecting severity of the disease; and demographic parameters. For quantitative data, Spearman's correlation coefficients were calculated, and qualitative parameters were analysed with Wilcoxon's and Kruskal-Wallis tests. A p-value of 0.05 was considered statistically significant.

Results

Item development and selection

An initial questionnaire comprising 123 questions (Q1) was obtained; most of them (approximately 80%) described discomfort caused by asthma.

Item reduction

Spearman's correlation coefficients between items from Q1 taken 2 by 2 were all lower than 0.6. The items were, thus, considered to be nonrepetitive and were all retained for the principal component analysis. Whilst other authors have used principal component factor analysis, even with dichotomous data, we did not consider the results to be satisfactory. No clear outcome was obtained from this analysis, as it only confirmed the distinction between the two categories of "negative" and "positive" items, with 75% of the items loaded on these two factors. The cumulative proportion of the variance explained by these two components was only 20% and 36 factors were necessary to explain 67% of the variance (with an eigen value for the 36th component of 1.02). In view of the 36 factors necessary, a rotation was not performed.

This led to the use of other methods [20]. The remaining items were regrouped into three subscales: physical, psychological and social dimensions. Subsequent subscales were defined using dimensions that had been generated in the initial discussions with patients. The physical dimension was split into two subscales: the first pertaining to different types of physical activity (mobility) and the second to symptoms. Items assessing acceptability of the disease and treatment were combined separately into a fifth subscale. A second version (Q2) of the scale, consisting of 73 items (53 "negative" and 20 "positive" items) in five subscales was, thus, obtained. The internal consistency of this entire scale and of the subscales was high (Cronbach's alpha coefficient: 0.93 and 0.83, 0.81, 0.84, 0.85, 0.73 for the entire scale and the five subscales respectively).

Study of the reproducibility of the questionnaire

Kappa coefficients of agreement calculated between the two evaluations of Q2 by Sample B, for each of the items, yielded the following results: the coefficients were satisfactory (>0.6) for 58 items; they were considered acceptable (0.4–0.6) for 11 items; and they were low (<0.2) for four items. Intraclass correlation coefficients calculated for the entire scale and four of the subscales were found to be very high (0.97 and 0.92, 0.93, 0.93, 0.91, respectively), indicating very good reproducibility. However, for the subscale entitled "Acceptance of the disease and its treatment" the intraclass correlation coefficient was <0.6. ANOVA on subscales scores for detection of reproducibility, showed that the time effect was

Table 3. – Spearman's correlation coefficients between different variables and scores of SIP and three versions of AIR Index (63 items)

Variables studied	AIR index nonweighted	AIR Index weighted by means	AIR Index weighted by medians	SIP
Total of the SIP	0.66	0.65	0.64	1
Visual analogue scale	0.65	0.67	0.67	0.40
PEFR	-0.38	-0.37	-0.37	-0.31
PEFR (% pred)	-0.31	-0.31	-0.31	-0.26
Intensity of attacks during the last 12 months (mild, moderate, severe)	0.40	0.40	0.40	0.22
Intensity of attacks during the preceding month (mild, moderate, severe)	0.37	0.38	0.38	0.19**
Exertional dyspnoea during the preceding month (none, with much exertion, walking rapidly, walking normally, after any exertion)	0.44	0.45	0.45	0.34
Consumption of oral corticosteroids during the last 12 months (none, <1 g, 1–2 g, >2 g)	0.34	0.33	0.33	0.23

SIP: Sickness Impact Profile; AIR: Asthma Impact Record; % pred: percentage of predicted value; PEFR: peak expiratory flow rate. **: $p<0.01$. All other correlations are statistically significant at $p<0.0001$.

Table 4. – Spearman's correlation coefficients between different variables and subscale scores of AIR Index (n=387)

Variables studied	Subscale scores			
	Psychological dimension	Physical "Activity" dimension	Physical "Symptoms" dimension	Social dimension
Total of the SIP	0.54	0.57	0.60	0.60
PEFR	-0.25	-0.41	-0.32	-0.28
PEFR (% pred)	-0.22	-0.33	-0.28	-0.23
Intensity of attacks during the last 12 months (mild, moderate, severe)	0.33	0.37	0.33	0.34
Intensity of attacks during the last 12 months (mild, moderate, severe)	0.32	0.33	0.34	0.26
Exertional dyspnoea during the preceding month (none, with much exertion, walking rapidly, walking normally, after any exertion)	0.33	0.44	0.42	0.36
Consumption of oral corticosteroids during the last 12 months (none, <1 g, 1–2 g, >2 g)	0.29	0.29	0.29	0.28

All correlations are statistically significant at p<0.0001. For abbreviations see legend to table 3.

significant (p<0.05) for the above-mentioned subscale only, indicating that this subscale was not reproducible.

These results led to the removal of this subscale as well as the four items whose reproducibility measured by kappa coefficients were found to be very poor, obtaining a final version (Q3) with 63 items.

Weighting of items

Spearman's correlation coefficients between total scores of the three questionnaires considering the 63 items (non-weighted version of Q3, version of Q3 weighted by means, and version of Q3 weighted by medians) and concurrent variables are given in table 3. These results show the high convergent validity of the scale. They also show that the weighting of items did not improve the performance of the scale. Thus, an unweighted version of the scale (Q3) was retained as the final version. This version was subsequently called "the AIR Index".

This version has 52 negative items (1 if ticked and 0 if not ticked) and 11 positive items (0 if ticked and 1 if not ticked) in four subscales. The total score has a maximum possible value of 63, which indicates a very poor quality of life.

Validity of the final version of the questionnaire

The internal consistency of the scale measured by Cronbach's alpha was high: values of this coefficient were 0.94 for the entire scale and 0.83, 0.83, 0.79 and 0.85, respectively for the previously mentioned subscales (these values are those which were obtained on data in Sample A; the coefficients were also calculated on data in Samples B and C, and were also found to be very satisfactory). Concurrent validity was demonstrated by the presence of high Spearman correlation with the SIP (r=0.66; n=387) with the SIP and the visual analogue rating scale (r=0.65; n=322).

Table 5. – Values of the overall score and disease severity within the last 12 months

	n	AIR Index scores		Test
Intensity of attacks				K-W
Mild	91	11.1±8.5	(9)	
Moderate	179	18.6±11.3	(16)	p<0.0001
Severe	75	24.0±12.2	(22)	
Dyspnoea at rest				Wilcoxon
Yes	180	21.1±12.1	(20)	p<0.0001
No	203	13.9±10.0	(12)	
Exertional dyspnoea				Wilcoxon
Yes	307	15.7±8.5	(16)	p<0.0001
No	77	12.3±10.3	(9)	

Values are presented as mean±SD, and median in parenthesis. AIR: Asthma Impact Record. K-W: Kruskal-Wallis.

Significant correlations of approximately 0.3–0.4 were observed between scores for the AIR Index (overall and subscales) and a large number of concurrent variables. Values for the overall score and for subscales scores depended significantly on disease severity measured by the following parameters: intensity of asthma attacks; presence and intensity of exertion dyspnoea; presence of dyspnoea at rest; and consumption of corticosteroids, with score values increasing with the severity of the disease (tables 3–5).

The study of the relationship between the values for the AIR Index and demographic parameters showed that scores on the total scale were significantly higher in females and in older patients (table 6). Considering the subscales according to sex, significantly higher scores were found for females for the psychological component (p=0.002), the physical component "mobility" (p<0.001), and the physical component "symptoms"(p=0.0001). The social score did not differ significantly between males and females (p>0.20). Considering the subscales according to age, significantly higher scores were found for older patients on each subscale (Kruskal-Wallis tests: p-value 0.0001–0.035). These results are consistent with the differences that were found between males and females and younger and older patients in our population.

The AIR Index was also found to have a greater concurrent validity than the SIP in exploring quality of life in asthmatic patients, as the correlations between the SIP and the concurrent variables were much lower than those observed between the AIR Index and the same variables (table 3). Distributions of the SIP and AIR Index scores in Population 2, showed that the latter is much more adapted to asthma, as nearly 80% of the population had a normalized SIP score of less than 10%, as compared to the AIR Index which has a much more normal distribution (fig. 1). Indeed, when interviewed, asthmatic patients did not feel concerned by most of the questions of the SIP.

Table 6. – AIR Index score by age and sex

Age yrs	n	AIR Index score All patients	n	AIR Index score Males	n	AIR Index score Females
18–29	89	13.2±9.2 (12)	40	12.2±9.7 (11)	49	13.9±8.8 (13)
30–50	150	16.3±11.7 (13)	66	13.5±11.5 (11)	84	18.6±11.4 (16)
>50	148	20.6±11.8 (21)	61	18.9±13.2 (18)	87	21.9±10.6 (21)
All patients	387	17.3±11.6 (15)	167	15.2±12.0 (12)	220	18.8±10.9 (15)

Values are presented as mean±SD, and median in parenthesis. Two Kruskal Wallis tests were performed: Comparison of score by age ($p<0.0001$); comparison of score by sex ($p<0.0001$).

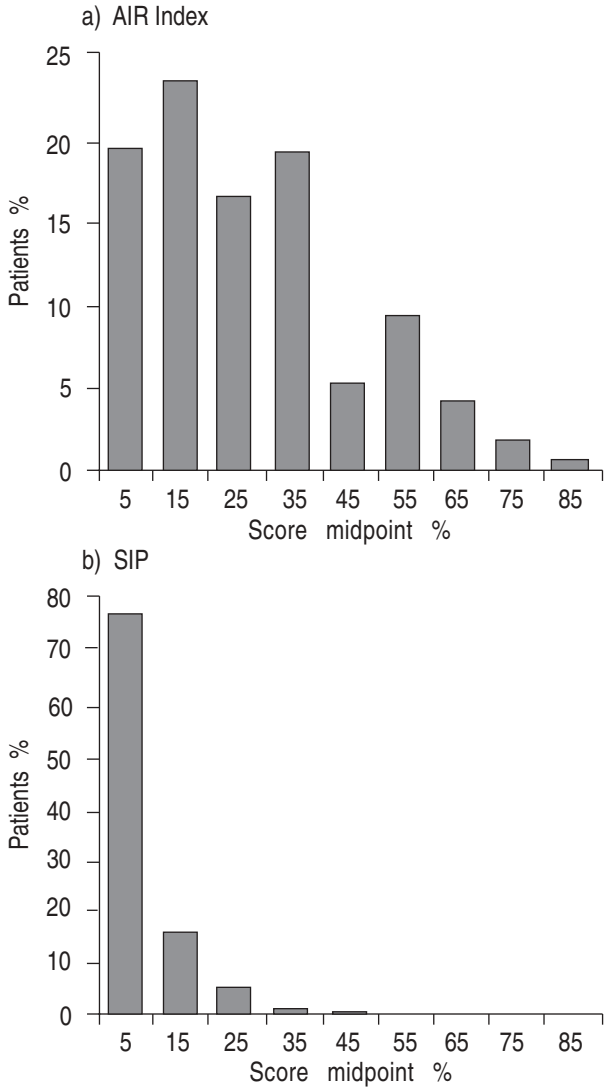

Fig. 1 – Percentage of patients in each group of: a) AIR Index; and b) SIP scores. Scores are given in percentage of maximal possible score. For each group of scores, the midpoint is given, *e.g.* 5 represents the group of scores between 0 and 10. AIR: Asthma Impact Record; SIP: Sickness Impact Profile.

Discussion

We have developed an instrument to measure the quality of life of asthmatic patients in France: "the AIR Index". It is an unweighted, dichotomous scale with 63 items, that may be classified into four subscales: physical activities, physical symptoms, psychological and social dimensions.

As our goal was to develop a scale which would be valid for all types of asthma, this study was conducted in a large number of chronic asthmatic patients with a wide range of disease severity. We observed a slight predominance of females among patients included, which has also been reported by other authors in the field [3–5]. The group of patients who weighted the items had a higher educational level than the general population. This may be due to the fact that patients were selected who would clearly understand what was requested of them. These patients were required to play the role of the "expert", rather than simply that of a respondent.

Evaluation of the scale showed that the internal consistency (as reflected by the internal homogeneity) was high, whether one considered the entire scale or the four subscales. Each sub-scale explores an aspect of quality of life but these aspects, as shown in other studies, are not completely independent [3]. While this may be an indication that our index measures a homogenous concept, "quality of life", the different subscale correlations between physical and psychosocial dimensions with the peak expiratory flow rate argue against a unidimensional scale.

Test-retest repeatability, evaluated by intraclass correlation coefficients, was found to be 0.97 for the overall scale, slightly higher than that (0.91) calculated for the "Saint George's Respiratory Questionnaire" (SGRQ) [6]. This might be due to the fact that our reproducibility questionnaire was conducted after a 3 day interval *versus* a 2 week interval for the SGRQ. Various time intervals are reported in the literature, *i.e.* 24 h for the SIP [14].

The convergent validity of the AIR Index, evaluated on the correlation between AIR Index and SIP scores, was found to be very high and similar to the existing correlation between the "Living with Asthma" questionnaire and the SIP [7]. However, the distribution of the AIR Index score was much higher than that of the SIP in our study population. The correlations between the AIR Index and the visual analogue rating scale on which patients evaluated their quality of life was also high, indicating a high convergent validity.

Correlations between the AIR Index and numerous variables of severity of asthma were calculated to evaluate the concurrent validity of the AIR Index. Significant correlations with range values of 0.3–0.4 were found. In particular, values found for correlations between total score and consumption of corticosteroid drugs and between overall scale and peak expiratory flow were very similar to those found in a study on the validity of the "Living with Asthma" questionnaire [7]. Although these correlations are significant, they are not excessively high, indicating that whilst quality of life is indeed related to severity of the disease, it reflects another dimension.

The fact that the two versions of the scale "weighted *versus* nonweighted" gave similar results poses an interesting question. We were not able to show that a weighted

scale gave different results from a scale where, in effect, all weights were equal to 1. It is possible that our weighting methods were not sufficiently sensitive for this population, but we were unable to find other studies where the same process had been followed, that is the comparison of weighted *versus* nonweighted scales. Most scales are weighted by patient or expert groups, and these weights are then compared in different populations. It would be interesting to know whether this phenomenum is more common than realized.

An issue that has not been addressed in this study is that of the sensitivity of the scale. Given the cross-sectional nature of the study and the size of the sample, we were unable to control for changes in patient status and treatment over time. For this reason, an additional study has been undertaken, with 160 asthmatic patients treated by clinical specialists in pulmonary centres in France. This subsequent study will enable us to evaluate the sensitivity and predictive validity of the scale, which we expect to be high in view of its concurrent validity.

The AIR Index is a "user-friendly" index for measuring quality of life in asthmatic patients, as it is self-administered, nonweighted and fast (requiring approximately 15 min to complete, as patients only tick items which concern them).

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